

PAPERS MISSING FROM SET OF JOURNAL
OF FEDERATED MALAY STATES MUSEUMS.

Volume I Jan., 1905 to May, 1906.

- no. 1: List of a Small Collection of Mammals, Birds and
Batrachians from Gunong Angsi, Negri Sembilan,
by H. C. Robinson (Jan. 1905) p. 25.
- no. 2: A Synopsis of the Birds At Present Known to
Inhabit the Malay Peninsula South of the
Isthmus of Kra. H. C. Robinson, April, 1905 p. 45.
- no. 3: On a New Species of Whistling Thrush from
Selangor, by W. R. Ogilvie-Grant (July, 1905) p. 104
- no. 3: On a New Species of Tree-Partridge from the
Mountains of the Malay Peninsula, by H. C.
Robinson, with Notes, by W. R. Ogilvie-Grant
(July, 1905) p. 105
- (This can be found in Ibis, for 1905 (Apr.),
- no. 4: A Synopsis of the Birds at Present Known to
Inhabit the Malay Peninsula, south of the
Isthmus of Kra, by H. C. Robinson (continued)
May, 1906 p. 124.

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PAPERS MISSING

Volume II

Dec., 1906 to March, 1909.

- no. 1: A Visit to the Area Islands, with a list of
Birds Found There, by H.C. Robinson. Dec., 1906 p. 8.

IN ORNITHOLOGICAL TRACTS 33, art. 21.

- no. 2: A Hand-List of the Birds of the Malay
Peninsula, South of the Isthmus of Kra.
H. C. Robinson Dec. 1907 p. 66
ORNITHOLOGICAL TRACTS 33, art. 23.

- no. 4: On a New Species of Cyornis from the
Mountains of the Malay Peninsula.
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ORNITHOLOGICAL TRACTS 33, art. 24.

The Birds at Present Known from the
Mountains of the Malay Peninsula.

H. C. Robinson. March, 1909 p.164
ORNITHOLOGICAL TRACTS 33, art. 25.

MEMORANDUM

TO : THE SECRETARY OF THE ARMY

FROM : THE CHIEF OF THE BUREAU OF THE ARMY
SUBJECT: [Illegible]

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Very truly yours,
[Illegible Signature]
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VOLUME III

Dec., 1908 to November, 1911

- no.1: Report on the Gunong Tahan Expedition,
May-Sept., 1905, Birds by W. R.
Ogilvie-Grant. Dec., 1908 p.15

ORNITH. TRACTS 33, art. 26.

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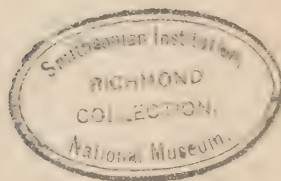
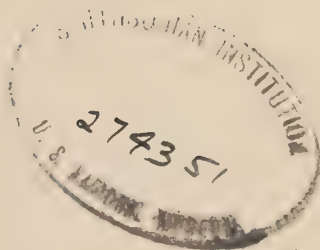
- no. 1: Notes on Birds New to, Or Rare in,
the Malay Peninsula, H. C.
Robinson Dec., 1909 p.129

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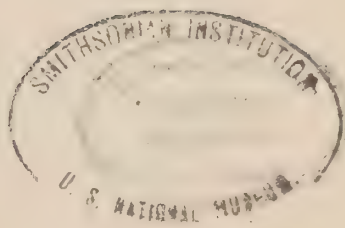
- no. 3: On a Collection of Mammals and Other
Vertebrates from the Trengganu
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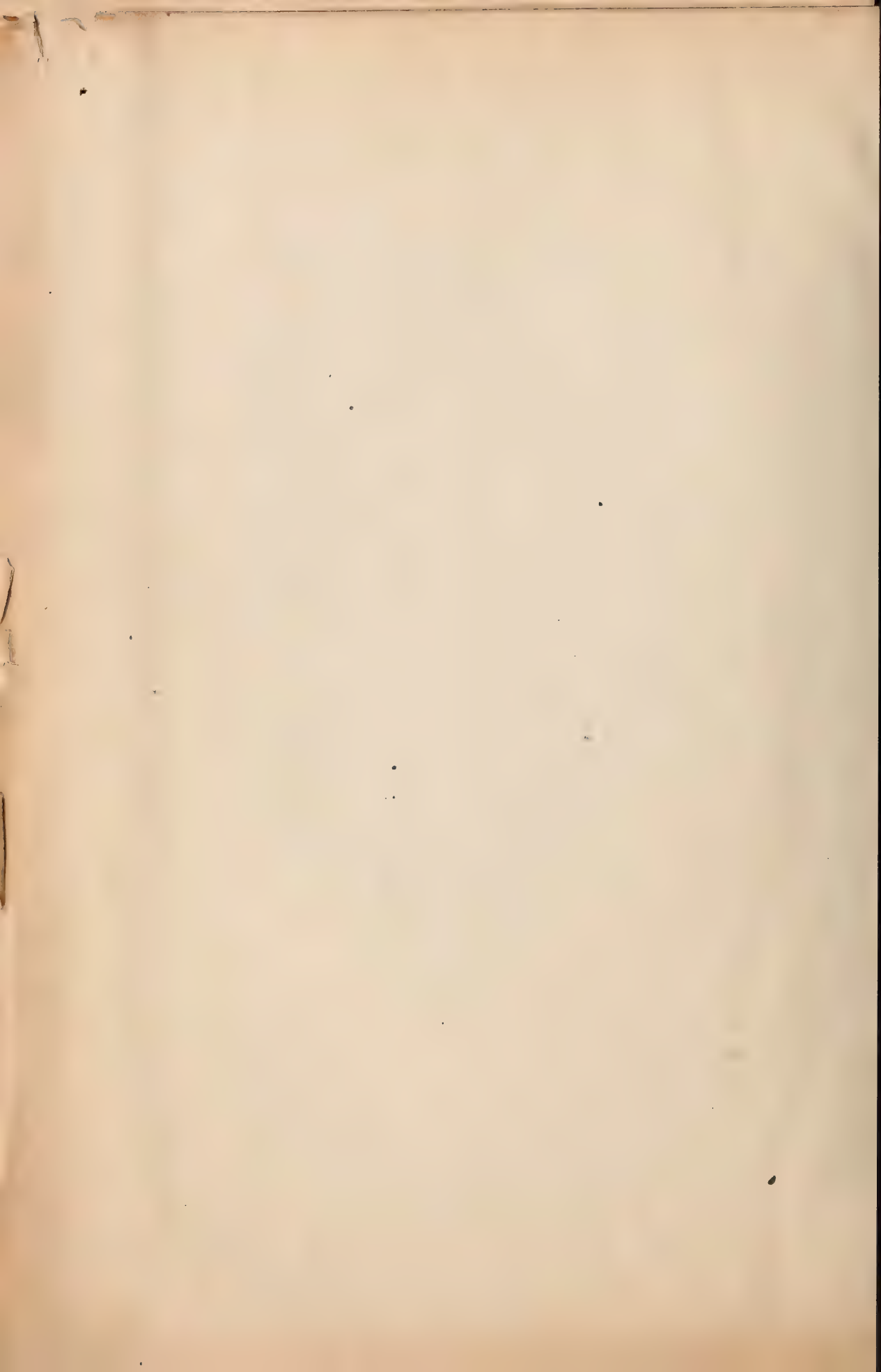
- On Mammals and Birds from the Hills
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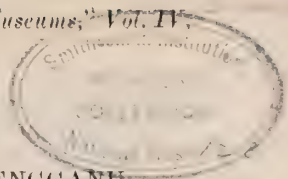
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ON MAMMALS AND BIRDS FROM TRENGGANU.

By C. BODEN KLOSS, F.Z.S., M.B.O.U.

TRENGGANU is a district of the Malay Peninsula that has received very little attention from zoologists. In September and October, 1900, I visited it with Dr. W. L. Abbott in his yacht "Terrapin," and we spent a month working various places on the coast between the Trengganu and Kemaman Rivers. In September, 1910, I went there again, accompanied by the Museum Dyak collectors.

The results of both visits were a little disappointing. Owing to the nature of the soil and the great amount of clearing that has taken place in remote times along the coast, we could not reach any good collecting spots from our schooner on the first occasion; later, on my return from the exploration of the Redang and Perhentian Islands, I was pressed for time and, as the month was the month of fasting (bulan puasa), the natives not unreasonably refused to engage as carriers or boatmen to the inland districts. Thanks, however, to the assistance of the British Agent, Mr. W. D. Scott, who lent us his motor-boat, we were enabled to proceed seven or eight miles up the Sungei Nerus which enters the north bank of the Trengganu River, a mile above the town of that name, and a camp was made near Bukit Jong, a small hill 700 or 800 feet in height, on which still remains a small amount of virgin jungle. A week was passed in this locality, not a good one for our purpose, but the best available under the circumstances.

An excursion by canoe was also made to Pulau Kapas, an island which lies 11 miles south from Trengganu and a mile from shore, in the hope that species of small mammals might be found thereon. The trip was almost without result: two or three common birds and a form of *Mus rattus* alone being met with: and the latter was stated to be the only mammal inhabiting the island.

As no report on the visit of the "Terrapin" has been published, I now combine in one list the species then obtained and those of my more recent collections: of the first collection, the mammals are from my notes; for the birds I am indebted to Dr. C. W. Richmond, of the United States National Museum; and both are indicated by their localities, which at this date I can only give as "Coast of Trengganu"; though our principal collecting grounds were Trengganu Town, Tanjong Dungun, Pakeh River, Tanjong Laboha and Kuala Kemaman.

The only other visit of which I am aware is that paid by Messrs. Evans and Laidlaw, of the "Skeat" Expedition in October, 1899, when mammals appear to have been collected by both these gentlemen and birds by the latter. Mr. I. L. Bonhote in his reports on their

specimens * records from "Trengganu," under the name of *Sciurus caniceps*, Gray, two examples of a common squirrel which should stand as *S. concolor*, Blyth. The following birds were obtained, presumably all from Trengganu Town; of them only Nos. 2, 3, 8, 10 and 11 were not met with by me:

- | | |
|--|---|
| 1. <i>Turtur tigrinus</i> (Temm.). | 9. <i>Zantholaema haematocephala</i>
(P. L. S. Müll.). |
| 2. <i>Charadrius domenicus</i> (P.L.
S. Müll.). | 10. <i>Pitta cyanoptera</i> , Temm. |
| 3. <i>Ægialitis alexandrina</i> (Linn.). | 11. <i>Pitta cucullata</i> , Hartl. |
| 4. <i>Rhyacophilus glareola</i> (Gm.). | 12. <i>Rhipidura javanica</i> ,
Sparrm. |
| 5. <i>Haliaetus leucogaster</i> (Gm.). | 13. <i>Pycnonotus analis</i> (Horsf.). |
| 6. <i>Polioaetus ichthyæus</i>
(Horsf.). | 14. <i>Calornis chalybea</i> (Horsf.). |
| 7. <i>Halcyon smyrnensis</i> (Linn.). | 15. <i>Æthiospar fuscus</i> (Wagl.). |
| 8. <i>Cacomantis merulinus</i> (Scop.). | 16. <i>Anthus rufulus</i> , Vieill. |

MAMMALS.

1. HYLOBATES LAR (LINN.).

Coast of Trengganu.

2. PRESBYTIS OBSCURA, *subsp.*

Bukit Jong. 3 ♂.

These animals are members of a race of *P. obscura* which occurs also in the Perhentian Islands, and of which a description will shortly appear.

3. NYCTICEBUS MALAYANUS (ANDERSON).

Coast of Trengganu.

4. MUSTELA FLAVIGULA PENINSULARIS, BONH.

Bukit Jong. 1 ♀.

5. CYNOPTERUS BRACHYOTIS ANGULATUS, MILLER.

Coast of Trengganu.

6. RHINOLOPHUS, *sp.*

Coast of Trengganu.

7. TUPAIA FERRUGINEA, RAFFLES.

Bukit Jong. 1 ♂; 1 ♀.

Coast of Trengganu (Tanjong Dungun, 1 ♂, 1 ♀, in Selangor Museum).

These are typical *ferruginea*. I have compared them with topotypes from Singapore and can detect no difference whatever.

8. RATUFA MELANOPEPLA, MILLER.

Coast of Trengganu.

9. SCIURUS CONCOLOR, BLYTH.

Bukit Jong. 15 ♂; 9 ♀.

Coast of Trengganu.

I have compared this large series with another large series of topotypes from Nyalas, Malacca, obtained less than a month later. Series

* Proceedings of the Zoological Society, 1900, p. 877; 1901, vol. I, p. 57 *et seq.*

for series the Trengganu animals are a trifle duller—*i.e.*, the top and sides of head are greyer, the ring round the eye is paler, and the orange-tawny suffusion of back and tail is less intense.

10. *SCIURUS (VITTATUS) MINIATUS*, MILLER.

Bukit Jong. 12 ♂; 12 ♀.

Coast of Trengganu.

A typical series, indistinguishable from Trang (type locality) and East Coast animals.

11. *SCIURUS (NIGROVITTATUS) BILIMITATUS*, MILLER.

Coast of Trengganu. 2 specimens.

One of these, a female from Tanjong Laboha, is the type. The race extends across the Peninsula to Upper Perak and goes northward.

12. *SCIURUS TENNIS*, HORSE.

Bukit Jong. 7 ♂; 3 ♀.

Coast of Trengganu.

I have carefully compared the Bukit Jong series with a series of topotypes from Singapore. None of that dulness of pelage, which *S. tenuis* exhibits towards the northern extreme of its range, is traceable. On the contrary, the Trengganu series is more ochraceous than the Singapore collection, especially as regards the under surface of the body; the under parts of three males in particular being unmatched for depth and spread of that colour, while the abdomens of the remainder are decidedly more buffy, but the skulls and teeth do not differ appreciably.

Sciurus tenuis surdus, Miller,* was described from Trang examples, but, owing to the fact that until lately we had seen no topotypes, while the authorities of the United States National Museum had sent us specimens from Johore under that name, thus, apparently restricting the typical *tenuis* to Singapore Island, we had been unable to regard the race as valid.† We have recently, however, obtained a series of topotypes, and I am now prepared to accept Miller's race as distinct. It is confined, however, to the more northern parts of the Peninsula, though of course connected with *Sciurus tenuis typicus* by many intermediate animals, but, however indefinite many of these latter may be, by no means all individuals from the mainland must be placed under Miller's sub-species as I have shown above.

13. *MUS VOCIFERANS*, MILLER.

Coast of Trengganu.

14. *MUS SURIFER*, MILLER.

Bukit Jong. 2 ♂; 1 ♀.

Coast of Trengganu.

* Proceedings of the Washington Academy of Sciences, vol. II, p. 8, July 25, 1900.

† *Vide* Journal of the F.M.S. Museums, vol. IV, No. 1, p. 117, December, 1909.

15. *MUS CREMORIVENTER*, MILLER.

Coast of Trengganu (Tanjong Dungun).

16. *MUS RATTUS JALORENSIS*, BONH.

Bukit Jong. 2 ♂; 2 ♀.

17. *MUS CONCOLOR*, BLYTH.

Bukit Jong. 2 ♂; 4 ♀.

18. *MUS DECUMANUS*, PALLAS.

Trengganu Town.

The mangled bodies of the Norway Rat were frequently to be seen in the streets in the early morning. A considerable trade between Trengganu and Singapore has long been carried on by native sailing vessels and has afforded a means for the introduction of this wide-spreading animal.

19. *TRAGULUS CANESCENS*, MILLER.

Bukit Jong. 1 ♀.

Coast of Trengganu.

Hind foot of Bukit Jong example, 134 mm.

BIRDS.

1. *EXCALFACTORIA CHINENSIS* (LINN.).

Coast of Trengganu.

These little Quails are fairly common along the coast, where there is much open grass land.

2. *PAVO MUTICUS*, LINN.

Bukit Jong.

Coast of Trengganu.

Peafowl are numerous in Trengganu: they are to be met with along the rivers and in open spaces near forests.

3. *OSMOTRERON VERNANS* (LINN.).

Coast of Trengganu.

4. *TURTUR TIGRINUS* (TEMN.).

Bukit Jong.

5. *GEOPELIA STRIATA* (LINN.).

Coast of Trengganu.

Both this and the last species are commonly seen feeding in the open grass lands, and in the rice-field after the crop is harvested.

6. *RHYACOPHORUS GLAREOLA* (GM.).

Bukit Jong.

The Wood-Sandpiper inhabits inland districts and is rarely seen near the sea.

7. *GARZETTA GARZETTA* (LINN.).

Coast of Trengganu.

8. *SPILOORNIS PALLIDUS* (WALDEN).

Bukit Jong.

9. *HALIAETUS LEUCOGASTER* (GM.).

Coast of Trengganu.

10. *HALIASTUR INTERMEDIUS*, GURNEY.

Coast of Trengganu.

11. *MICROHIERAX FRINGILLARIUS* (DRAP.).

Bukit Jong.

12. *EURYSTOMUS ORIENTALIS* (LINN.).

Coast of Trengganu.

13. *PELARGOPSIS MALACCENSIS*, SHARPE.

Coast of Trengganu.

Though inhabiting estuaries it is also common in inland districts.

14. *ALCEDO BENGALENSIS*, GM.

Coast of Trengganu.

15. *DICHEROS BICORNIS* (LINN.).

Bukit Jong.

The Double-casqued Hornbill is a bird that is not frequently seen in the Peninsula.

16. *CAPRIMULGUS AMBIGUUS*, HARTERT.

Bukit Jong.

17. *MACROPTERYX LONGIPENNIS* (RAFIN.).

Coast of Trengganu.

The Long-winged Swift frequents the Casuarinas along the beach.

18. *PYROTROGON NEGLECTUS*, FORBES & ROBINSON.

Coast of Trengganu.

19. *RHOPODYTES SUMATRANUS* (RAFFLES).

Coast of Trengganu.

20. *RHINORTHA CHLOROPHEA* (RAFFLES).

Bukit Jong.

Coast of Trengganu.

21. *UROCOCCYX ERYTHROGNATHUS* (HARTL.).

Bukit Jong.

Coast of Trengganu.

22. *CHOTORHEA MYSTACOPHANES* (TEMML.).

Coast of Trengganu.

23. *THEREICERYX LINEATA* (VIEILL.).

Coast of Trengganu.

The Brown-headed Barbet was obtained in some numbers during the first visit in 1900, but was not met with later. South of Trengganu and Kedah it is almost unknown; a single individual is on record from Central Pahang.

24. *MESOBUCCO CYANOTIS* (BLYTH).

Bukit Jong.

These Barbets are decidedly of the blue-eared northern type: the two forms must widely overlap each other on the East Coast, for Grant (*Fasciculi Malayenses Zoology, Report on the Birds, p. 102*) records black-eared individuals from Nawngchik in Patani.

25. *ZANTHOLAEMA HAEMATOCEPHALA* (MÜLL.).

Bukit Jong.

The Coppersmith was common round Bukit Jong, and was the only species of Barbet met with except the preceding.

26. *GEVINUS OBSERVANDUS*. HARTERT.

Coast of Trengganu.

Individuals of several species of Woodpecker are very numerous along the coast, where they are freely observed flying from tree to tree in the open country.

27. *IYNGIPICUS CANICAPILLUS*. BLYTH.

Coast of Trengganu.

28. *MIGLYPTES GRAMMITHORAX* (MAHL.).

Bukit Jong.

Coast of Trengganu.

29. *MIGLYPTES TUKKI* (LESS.).

Coast of Trengganu.

30. *TIGA JAVANENSIS* (LJUNG).

Bukit Jong.

Coast of Trengganu.

31. *CORYDON SUMATRANUS* (RAFFLES).

Bukit Jong.

Met with in the tops of high jungle trees.

32. *CYMBORHYNCHUS MALACCENSIS*. SALVAD.

The beautiful Blue-billed Gaper occurs in numbers near Bukit Jong, where its habit of perching and flitting along the banks of the river renders it conspicuous.

33. *XANTHOPYGIA XANTHOPYGIA* (HAY).

Bukit Jong.

This example and another obtained in Central Pahang a fortnight later are young males in immature plumage, which have evidently just arrived from the north. It is not common in this latitude: the only other specimens known to me are a pair from near Kuala Lumpur and a female shot eleven years ago on the Anambas Islands.

34. *HIRUNDO JAVANICA*, SPARR.

Coast of Trengganu.

35. MUSCOTREA CINEREA, BLYTH.

Pulau Kapas.

The Ashy Flycatcher is rare in inland districts, but is often met with near the sea: in certain localities it appears to particularly delight in mangroves.

36. HYPOTHYMIS AZUREA (BODD.),

Coast of Trengganu.

Only found in deep jungle, where it frequents the lower branches, and is very fearless.

37. RHIPIDURA JAVANICA (SPARRM.).

Coast of Trengganu.

This Fantail Flycatcher is a bird of low scrub and open country.

38. TERPSIPHONE AFFINIS (BLYTH).

Coast of Trengganu.

39. (?) PERICROCOTUS FLAMMIFER, HUME.

Coast of Trengganu.

This should probably be *P. igneus*, Blyth, as *P. flammifer* is, in the southern parts of the Peninsula, of sub-montane habitat.

40. EGITHINA TIPHIA (LINN.).

Bukit Jong.

41. CHLOROPSIS CHLOROCEPHALA (WALD.).

Coast of Trengganu.

If Dr. Richmond's identification is correct, this forms a record for the southern extension of this species; I, myself, am only certain of having obtained *C. chlorocephala* in Trang, a hundred and fifty miles to the north.

42. IRENA PUELLA (LATH.).

Coast of Trengganu.

The northern species grades into the southern *C. cyanea* in this latitude, and I think birds from Trengganu may be referred with equal correctness to either.

43. EUPTILOSUS EUPTILOSUS, JARD. & SELBY.

Coast of Trengganu.

A widely distributed but nowhere common Bulbul.

44. ALOPHOIXUS PHAEOCEPHALUS (HARTL.).

Coast of Trengganu.

45. TRACHYCOMUS OCHROCEPHALUS (GM.).

Bukit Jong.

Coast of Trengganu.

46. PYCNONOTUS ANALIS (HOESE).

Coast of Trengganu.

47. *PYCNONOTUS PLUMOSUS*, BLYTH.
Bukit Jong.
Coast of Trengganu.
48. *PELLORNEUM SUBOCHRACEUM*, SWINH.
Bukit Jong.
49. *TURDINUS OLIVACEUS* (STRICKL.).
Coast of Trengganu.
50. *TURDINUS MAGNIROSTRIS*, MOORE.
Coast of Trengganu.
51. *SETARIA MAGNA* (EYTON).
Coast of Trengganu.
52. *SETARIA CINEREA* (EYTON).
Coast of Trengganu.
53. *CYANODERMA ERYTHROPTERUM* (BLYTH).
Coast of Trengganu.
54. *MACRONUS PTILOSUS*, JARD. & SELBY.
Coast of Trengganu.
55. *MIXORNIS GULARIS* (RAFFLES).
Coast of Trengganu.
56. *COPSYCHUS MUSICHUS* (RAFFLES).
Coast of Trengganu.
57. *CITTOCINCLA MACRURA* (GM.).
Bukit Jong.
58. *BURNESIA FLAVIVENTRIS* (DELESS.).
Coast of Trengganu.
59. *HEMIPUS OBSCURUS* (HORSE.).
Coast of Trengganu.
60. *PLATYLOPHUS ARDESIACUS*, CAB.
Coast of Trengganu.
61. *LANIUS TIGRINUS*, DRAP.
Bukit Jong.
62. *LANIUS SUPERCILIOSUS*, LATH.
Coast of Trengganu.
63. *MELANOCHLORA FLAVOCRISTATA* (LAFR.).
Coast of Trengganu.
64. *CORVUS MACRORHYNCHUS* (WAGL.).
Bukit Jong.
65. *PLATYSMURUS LEUCOPTERUS* (TEMME.).
Bukit Jong.
66. *DISSEMUMURUS PARADISEUS* (LINN.).
Bukit Jong.

67. *ALORNIS CHALYBEA* (HORSE.).

Bukit Jong.

68. *AGROPSAR STURNINUS* (PALL.).

Bukit Jong.

Coast of Trengganu.

Nowhere a common bird in the southern half of the Peninsula, though occasionally met with in large flocks.

69. *LETHIOSPAR FUSCUS* (WAGL.).

Bukit Jong.

Very common in open spaces.

70. *MUNIA ATRICAPILLA* (VIEILL.).

Coast of Trengganu.

71. *MUNIA MAJA*, LINN.

Coast of Trengganu.

72. *LEMONIDROMUS INDICUS* (GM.).

Bukit Jong.

73. *ANTHUS MALAYENSIS*, EYTON.

Coast of Trengganu.

74. *CYRTOSTOMUS PECTORALIS* (TEMN.).

Coast of Trengganu.

75. *CYRTOSTOMUS FLAMMAXILLARIS* (BLYTH).

Coast of Trengganu.

Dr. Richmond has placed a note of interrogation against this title, and I think the bird in question is probably an example of the last species. *C. flammavillaris* is hardly likely to occur so far south.

76. *LETHOPYGA SIPARAJA* (HORSE.).

Coast of Trengganu.

77. *ANTHOTHREPTES HYPOGRAMMICA* (S. MÜLL.).

Coast of Trengganu.

78. *ANTHOTHREPTES MALACCENSIS* (SCOP.).

Bukit Jong.

Coast of Trengganu.

79. *DICAECUM CRUENTATUM*, LINN.

Coast of Trengganu.

The following species were observed:

Treron nipalensis, Hodgs.
 Carpophaga ænea (Linn.).
 Tringoides hypoleucus (Linn.).
 Gallinago stenura (Kuhl.).
 Fregata aquila (Linn.).
 Spizaetus limnaetus (Horsf.).
 Halcyon pileatus (Bodd.).
 Buceros rhinoceros (Linn.).

Anthracoceros, *sp.*
 Macropteryx comata (Temm.).
 Copsychus musicus (Raffles).
 Eulabes javanensis (Osbeck).
 Passer montanus, Linn.
 Arachnothera longirostris
 (Lath.).
 Dicaeum trigonostigma (Scop.).



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ON MAMMALS AND BIRDS FROM THE LOWLANDS OF PAHANG.

By C. BODEN KLOSS, F.Z.S., M.B.O.U.

PAHANG has been but little explored zoologically, and the results of two small collecting visits to that State are now put on record.

The narrative of a trip up the Pahang, Tembeling and Tahan Rivers, undertaken in 1891 by Messrs. H. N. Ridley, W. Davison and Lieut. H. J. Kelsall, was accompanied by lists of mammals and birds observed and collected during the journey. These lists, drawn up by Mr. Ridley and Lieut. Kelsall, consist so largely of species observed, rather than obtained, that they are not altogether reliable, but they present the first information we have of the animal life of the region.

The mammals noted are the larger and commoner species only, but amongst the birds recorded are two or three of interest—viz., *Gerygone modiglianii*, Salvad (*G. pectoralis*, Davison), which was obtained for the first time in the Peninsula; a somewhat dubious species, *Setaria melanocephala* (Davison), which, if distinct, is very closely allied to *S. affinis*, Blyth, was described; and a new species of *Myna*, *Acridotheres torquatus*, Davison, was also obtained.

The next collection from Pahang was made by Mr. Waterstradt on Gunong Tahan and is dealt with by Dr. Hartert in a paper entitled "On Birds from Pahang, Eastern Malay Peninsula": besides an account of the mountain birds it includes a number of species obtained by collectors in the lowlands of Pahang and also from the Sungei Lebeh.

More recent information is contained in the reports on the collections of mammals and birds made by Messrs. Robinson and Wray in 1905 on Gunong Tahan and at Kuala Tembeling.

Finally, some years ago, Dr. W. L. Abbott collected along the course of the Rompin River in South-eastern Pahang: no account of his specimens has been published, but the following were obtained or observed:

- | | |
|---|---|
| 1. <i>Hylobates lar</i> (Linn.). | 10. <i>Tragulus rarus</i> , Miller. |
| 2. <i>Presbytis obscura</i> (Reid). | 11. <i>Ratufa melanopepla</i> , Miller. |
| 3. <i>Felis tigris</i> , Linn. | 12. <i>Ratufa aureiventer</i> (Geoffr.). |
| 4. <i>Paradoxurus hermaphroditus</i> ,
Pallas. | 13. <i>Sciurus tenuis</i> , Horsf. |
| 5. <i>Elephas maximus</i> , Linn. | 14. <i>Mus vociferans</i> , Miller. |
| 6. <i>Tapirus indicus</i> , Cuv. | 15. <i>Mus surifer</i> , Miller. |
| 7. <i>Bos gaurus hubbacki</i> ,
Lydekker. | 16. <i>Mus asper</i> , Miller. |
| 8. <i>Cervus unicolor equinus</i> , Cuv. | 17. <i>Tupaia malaccana</i> ,
Anderson. |
| 9. <i>Tragulus canescens</i> , Miller. | 18. <i>Galeopterus peninsulæ</i> ,
Thomas. |

The collections dealt with below were obtained: the first during May, 1910, at Genting and Punjom, spots about seven miles west of Kuala Lipis, which localities are quoted as "Lipis"; the second during June of the same year, at places between six to nine miles west

of Bentong, which place, in default of any other name, is given as the locality of the specimens.

In view of our present knowledge of the lowland fauna of the Peninsula, there are very few points to enlarge on: a certain number of species are recorded from the district for the first time, of which perhaps *Sciurus robinsoni alacris*, Thomas, a form of *Sciurus prevostii*, Desm., and *Mus pellar*, Miller, are the more interesting among the mammals, though they are such as we should expect to find there; while the known distribution of others has been slightly extended.

Of the birds, the two specimens of *Alcedo evryzona*, Temm., the rare Banded Kingfisher, are the first which have been taken for many years in the Federated Malay States; while the unstable state of *Mesobucco durauceli* (Less.), the commonness of *Munia leucogastra* (Blyth), scarcely ever met with in Perak or Selangor, and the fact that *Setaria affinis* (Blyth) occurs in an area where another closely allied form was thought to have replaced it, are all that call for comment.

PAHANG BIBLIOGRAPHY.

RIDLEY, H. N.:

List of Mammals recorded from Pahang. *Journal of the Straits Branch Royal Asiatic Society*, No. 25, Jan., 1894, pp. 57-60.
Quoted as "Ridley."

KELSALL, H. J.:

List of Birds observed or collected during a Trip in Pahang. *Journal of the Straits Branch Royal Asiatic Society*, No. 25, Jan., 1894, pp. 60-65. Quoted as "Kelsall."

HARTERT, E.:

On Birds from Pahang, Eastern Malay Peninsula. *Novitates Zoologicæ*, ix, 1902, pp. 537-625. Quoted as "Hartert."

BONHOTE, J. L.:

Report on the Mammals, Gunong Tahan Expedition. *Journal of the Federated Malay States Museums*, vol. III, 1908, pp. 1-11.
Quoted as "Bonhote."

OGILVIE-GRANT, W. R.:

Report on the Birds, Gunong Tahan Expedition. *Journal of the Federated Malay States Museums*, vol. III, 1908, pp. 15-57.
Quoted as "Grant."

MAMMALS.

1. HYLOBATES LAR (LINS.).

Hylobates lar, Bonhote, p. 2; Kloss, *Journal of the Straits Branch Royal Asiatic Society*, No. 53, 1909, p. 6.

Hylobates albimanus, Ridley, p. 57.

1 ♂. Lipis.

A specimen in the dark brown stage of pelage.

2. PRESBYTES OBSCURUS (REID).

Presbytes obscurus, Bonhote, p. 2; Kloss, op. cit., p. 7.

Semnopithecus obscurus, Ridley, p. 57.

2 ♀. Bentong.

Monkeys of the same species were also observed at Lipis. These specimens are somewhat pale in colour, the hands and feet alone being black. They exactly correspond with topotypes from Malacca.

3. MACACA NEMESTRINA (LINN.).

Macaca nemestrina, Kloss, op. cit., p. 9.

Macacus nemestrinus, Ridley, p. 57.

1 ♂. Bentong.

A young male with the posterior molars still uncut, closely resembling the adult female in colour. The fur is only slightly annulated and the wash of black on back and rump is not strong.

4. NYCTICEBUS MALAYANUS (ANDERSON).

Nycticebus malayanus, Kloss, op. cit., p. 11.

Nycticebus tardigradus, Ridley, p. 57.

1 ♂. Bentong.

This specimen is rather duller and colder in colour than usual. In this respect, and also in the large size of the skull (greatest length, 62 mm.; zygomatic breadth, 44 mm.), it approximates to *N. coucang* (Boddaert) of Burmah and E. Bengal.

5. PARADOXURUS HERMAPHRODITUS, PALLAS.

Paradoxurus hermaphroditus, Kloss, op. cit., p. 22.

(?) *Viverricula malaccensis*, Ridley, p. 58.

1 ♀. Lipis.

1 ♂. Bentong.

The Lipis example shows the white-tipped tail, which so frequently occurs in this species.

6. TRAGULUS RAVUS, MILLER.

Tragulus rarus, Miller, Proc. Biol. Soc. Washington, 1902, p. 174.

Tragulus kanchil rarus, Bonhote, p. 11; Kloss, op. cit., p. 44.

Tragulus javanicus, Ridley, p. 60.

1 ♀. Lipis.

7. RATUFA AUREIVENTER (GEOFFR.).

Sciurus aureiventer, Cantor, Jour. Asiatic Soc. Bengal, 1846.

Sciurus bicolor, Ridley, p. 59.

Ratufa affinis aureiventer, Bonhote, Ann. and Mag. Nat. Hist., (7), v, 1900, p. 495; Bonhote, p. 5.

1 ♀. Lipis.

1 ♂. Bentong.

Owing to the fact that the squirrels of the genus *Ratufa* are nearly always wearing out (a process to which the term bleaching has been

applied) or renewing their pelage, perfect specimens are rarely obtained, and this individual variation has been the cause of much uncertainty and some confusion.

At present, however, three races of brown *Ratufa* can be distinguished in the Peninsula:

(1) *Ratufa pyrrsonota*, Miller.

General colour above uniform ochraceous and brown, markedly annulated but becoming on fore legs, sides and thighs scarcely speckled tawny-ochraceous, under parts and inner surfaces of legs clear ochraceous. Top of muzzle dark brown, sides of muzzle whitish, cheeks and chin grizzled brown or whitish. Tail a variable brown, the bases of the hairs whitish, the latter colour conspicuous on the under surface where the short hairs clothing the vertebræ are brown. Feet dark brown.

Occurs in the northern half of the Peninsula. Waterstradt (*vide* Robinson) has obtained specimens in North Pahang, and it is known in Perak as far south as Kuala Kangsar.

(2) *Ratufa affinis* (Raffles).

General colour above a variable café-au-lait brown, the hairs dark tipped and very faintly annulated but becoming on neck, fore legs, sides and thighs tawny-ochraceous; under parts and inner surfaces of legs clear white or whitish-buff. Muzzle, cheeks and chin as in *R. pyrrsonota*. Feet whitish or light buff like the under parts.

Occurs in Southern Johore and Singapore Island.

(3) *Ratufa aureiventer* (Geoffr.).

Nearly agrees with *R. affinis* above but below resembles *R. pyrrsonota*. The back and tail are very variable, ranging from isabelline-brown to pale cream buff. As Cantor has correctly noted, the feet may be dark or light—in fact, they range from dark brown to ochraceous-buff, those of much bleached and abraded individuals often showing patches of both colours.

Occurs in the area between the districts occupied by the two preceding animals.

All these races agree in the possession of a notable pale patch on the outer side of the thigh, and in an annulated upper surface, though when the pelage is worn this often disappears entirely.

Mr. R. C. Wroughton, in a recent paper dealing with the Giant-Squirrels (*Jour. Bombay Nat. Hist. Soc., Feb., 1910*), follows Mr. Bonhote in stating that *R. aureiventer* is a yellow-footed form and confines it to Malacca, while the range of *R. pyrrsonota* is given as from Trang to Selangor. But, as I have pointed out above, the former is both dark and light footed, and the gradation is so complete that the colour of the feet cannot be used as a differentiating character between these races, and *R. pyrrsonota* which, far from extending to Selangor, apparently barely enters the Federated Malay States, where *R. aureiventer*, as Mr. Bonhote correctly noted, is the prevailing form.

We must take it that *R. pyrrsonota* differs from the latter not so much in the colour of the feet as in the markedly annulated and ochraceous upper surface.

According to Mr. Bonhote, who last reviewed the squirrels of the *Prevostii* group (A. and M. N. H., 7, vii, 1901, p. 169), we have only two forms inhabiting the Peninsula: *Sciurus prevostii typicus*, in which the lateral white stripe runs unbroken from top of nose to heel of hind foot (extending also down the outer side of the fore limb), and *S. p. humei*, which has the shoulders fulvous-red, the colour of the fore limb extending upwards until it meets the black of the back. *S. p. typicus* appears to be confined to the southern extremity of the Peninsula ranging to Malacca, with perhaps Negri Sembilan, and the southern half of Pahang: I have examined Pahang examples from Tras, Liang and from the lower course of the Pahang River (Lebeh Tua). Examples of *S. p. humei*, Bonh., are known to me from Southern Perak (Blanja and Sungkai) and from localities throughout Selangor.

Two individuals of this group from Lipis and others from elsewhere fit with neither of these descriptions. From the first, they differ in having a variable degree of fulvous wash on the shoulders, and from the second, in that the colouring of the shoulders is never so intense or so large in extent. Their area of distribution seems to surround the red-shouldered form on the north and east, and I propose that individuals of this appearance should be known as:

8. *SCIURUS PREVOSTII WRAYI*, *subsp. nov.*

TYPE.—Adult male (skin and skull), No. 1,330/10, Selangor Museum. Collected at Genting, Kuala Lipis, Pahang, 11th May, 1910, by C. Boden Kloss. Original No. 3,261.

CHARACTERS.—Resembles *Sciurus prevostii*, Desm., but has the shoulders washed with the fulvous colour of the fore legs: differs from *S. p. humei*, Bonhote, in that the colouring of the shoulders is much less intense and frequently falls short of the black of the back.

COLOUR.—Above deep shining black. Below, including the entire fore limbs to elbows and the hind feet, a rich fulvous, deepest on the abdomen. On either side from back of shoulders to heel of hind feet a creamy white stripe broadening on the outer sides of the thighs. The fulvous hairs of the abdomen between shoulder and thigh adjoining this stripe have black bases. Sides of muzzle, chin, cheeks and sides of neck running up behind the ears chalky-white somewhat grizzled, the region below the eyes being darkest. Shoulders pale fulvous white, gradually deepening into the colour of the fore legs. Tail blackish below and grizzled at base, bleaching on the upper surface to a deep brown with a pale tip.

SKULL AND TEETH.—Skull and teeth do not in any way differ from those of the related forms.

MEASUREMENTS.—Collector's external measurements of type: head and body, 262; tail, 260; hind foot, 56; ear, 19.5. Cranial measurements of type: greatest length, 57; basal length, 48.3; median nasal length, 17; palatal length, 26.2; diastema, 14; molar row, 10.6; interorbital breadth, 24; postorbital constriction, 20; zygomatic breadth, 35.8.

REMARKS.—This squirrel, which appears to be distributed north and east of the related races, is intermediate between the two. The extent and depth of the colour on the shoulder are very variable, but the white lateral stripe is never entirely unbroken there as in *S. prevostii*, nor is ever attained the rich colour, widely in contact with the black back, of *S. p. humei*.

All other races of *Sciurus prevostii* with shoulder colouration of this type are instantly separable from *S. p. wrayi* by the grey or blackish sides of head and neck, which areas in the latter are whitish.

9. *SCIURUS HIPPIRUS*, GEOFFR.

Sciurus hippurus, Bonhote, p. 6.

2 ♂. Bentong.

Nowhere common in the Peninsula and always rarer than the last species.

10. *SCIURUS CONCOLOR*, BLTH.

Sciurus caniceps concolor, Bonhote, Ann. and Mag. Nat. Hist., (7), vii, 1901, p. 272; Bonhote, p. 7.

Sciurus griseimanus, Ridley, p. 59.

3 ♂; 5 ♀. Lipis.

2 ♂; 2 ♀. Bentong.

All the specimens have the entire dorsal area and tail suffused with ochraceous, deepest on the rump.

11. *SCIURUS BILIMITATUS JOHORENSIS*, ROBINSON & WROUGHTON.

Sciurus bilimitatus, johorensis, Robinson & Wroughton, Journ. F.M.S. Mus., vol. IV, No. 2 *postea*.

2 ♂. Lipis.

1 ♂; 1 ♀. Bentong.

This race is much less ochraceous than *S. bilimitatus*, Miller, and these examples mark, as far as is known, its northward extension.

12. *SCIURUS MINIATUS*, MILLER.

Sciurus notatus miniatus, Miller, Proc. Washington Acad. Sci., vol. II, 1900, p. 79.

Sciurus vittatus, Bonhote, p. 5.

Sciurus notatus, Ridley, p. 59.

3 ♂; 1 ♀. Lipis.

3 ♂; 3 ♀. Bentong.

These examples agree completely with specimen of *S. miniatus* from the eastern side of the Peninsula. All have the distal portion of the tail very strongly rufous.

13. *SCIURUS TENNIS*, HORSF.

Sciurus tenuis, Bonhote, p. 6.

3 ♂; 1 ♀. Lipis.

1 ♀. Bentong.

These examples agree with topotypes from Singapore.

14. *SCIURUS ROBINSONI ALACRIS*, THOS.

Sciurus robinsoni alacris, Thomas, Ann. and Mag. Nat. Hist., (8), ii, 1908, p. 306.

1 ♀. Bentong.

This is the southern and paler form of *Sciurus robinsoni*, Bonhote, from Bukit Besar, Patani States, and has only hitherto been obtained on the boundary range in Pahang. It is now known from numerous localities in the Western States, where its southern limit at present is Negri Sembilan.

15. *LARISCUS JALORENSIS*, BONHOTE.

Funambulus insignis jalorensis, Bonhote, Fasciculi Malayenses Zoology, Part I, 1903, p. 26.

Funambulus insignis peninsulæ, Bonhote, p. 8.

Sciurus insignis, Ridley, p. 59.

2 ♂; 2 ♀. Lipis.

1 ♀. Bentong.

I have recently seen specimens of the striped Ground-Squirrel from Trang, whence came the single individual on which Mr. Miller's (*Smithsonian Miscellaneous Collections*, vol. 45, 1903, p. 25) *Funambulus peninsulæ* was based, which does not appear to differ from examples described as *Funambulus insignis jalorensis* by Mr. Bonhote, a name that has priority of date.

Though individuals from Perak to Singapore have been "lumped" by Messrs. Thomas and Wroughton (*Journ. F.M.S. Museums*, vol. IV, 1909, p. 118) under the name of *Lariscus insignis*, there is a marked difference between those from the Federated Malay States and the Northern Malay Peninsula and those from Southern Johore and Singapore; animals from the former area being only fulvous on shoulders and thighs, whereas the others are strongly fulvous throughout above, and below are washed with orange-fulvous on thighs and on sides of throat. The southern specimens differ decidedly from a large northern series (if from it be excluded an isolated specimen from Bukit Kutu, Selangor, which outdoes them in richness of colour but appears abnormal). Mr. Bonhote has referred (*P.Z.S.*, 1906, vol. I, p. 6) Johore specimens to *F. peninsulæ*, Miller.

16. *RHINOSCIURUS*, *sp.*

Funambulus laticaudatus, Bonhote, p. 9.

Sciurus laticaudatus, Ridley, p. 59.

1 ♂. Lipis.

An immature specimen.

(The only other specimen of *Rhinosciurus* known to me from Pahang, other than those referred to above, is a female obtained by

Lieut. Kelsall at Kota Glanggi in 1891 and now in the Raffles Museum, Singapore. It was identified by Mr. Thomas as *R. laticaudatus*, M. & S., but now that *R. laticaudatus* is known to be confined to Borneo, it must be recorded as an example of *R. tupaoides*, Blyth, as the tail hairs are distinctly washed with whitish.)

17. MUS VOCIFERANS, MILLER.

Mus vociferans, Miller, Proc. Biol. Soc. Wash., vol. XIII, 1900, p. 138.

1 ♀. Lipis.

2 ♂; 1 ♀. Bentong.

18. MUS SURIFER, MILLER.

Mus surifer, Miller, Proc. Biol. Soc. Washington, vol. XIII, 1900, p. 148.

4 ♀. Bentong.

19. MUS PELLAX, MILLER.

Mus pellax, Miller, Proc. Biol. Soc. Washington, vol. XIII, 1900, p. 147.

1 ♂; 2 ♀. Bentong.

This species has not hitherto been obtained from the eastern side of the Peninsula.

20. MUS CREMORIVENTER, MILLER.

Mus cremoriventer, Miller, Proc. Biol. Soc. Wash., vol. XIII, 1900, p. 114; Bonhote, p. 10.

1 ♂. Lipis.

This, at present, is the most southerly record for the east side of the Peninsula.

21. MUS ASPER, MILLER.

Mus asper, Miller, Proc. Biol. Soc. Washington, xiii, 1900, p. 145.

1 ♂. Lipis.

4 ♂; 3 ♀. Bentong.

The series serves to show the variability of *Mus asper*. It ranges from typical bright-coloured animals with rusty bellies to duller-backed individuals with grey under parts. Rats from Eastern Sumatra, with the latter characters and size a trifle greater than the typical *M. asper*, have been separated by Dr. M. W. Lyon (Proc. U. S. Nat. Mus., vol. XXXIV, 1908, p. 644) under the name of *Mus mandus*. But duller colour and greater size are by no means always associated in the Peninsular animals, and it does not appear at present desirable to recognise more than the one species in our area.

22. MUS VALIDUS, MILLER.

Mus validus, Miller, Proc. Biol. Soc. Wash., xiii, 1900, p. 141; Bonhote, P.Z.S., 1906, vol. I, p. 10.

2 ♀. Lipis.

Immature individuals are much darker above than adults and have grey under parts only slightly washed with buff.

23. MUS JALORENSIS, BONH.

Mus jalorensis, Bonhote, Fasciculi Malayenses Zoology, Part I, 1903, p. 28.

1 ♂. Lipis.

2 ♂. Bentong.

White-bellied members of the *Rattus* group which appear referable to *M. jalorensis*, Bonh.

24. MUS CONCOLOR, BLYTH.

Mus concolor, Bonhote, p. 10.

1 ♂. Lipis.

25. RHIZOMYS SUMATRENSIS (RAFFLES).

1 ♂. Lipis.

An old male. Head and shoulders cream-buff, under surface whitish. Outer sides of fore limbs, a line from occiput to saddle and remainder of pelage grizzled greyish brown. Head and body, 380; tail, 140; hind foot, 56; ear, 20 mm.

26. TUPAIA FERRUGINEA, RAFFLES.

Tupaia ferruginea, Bonhote, p. 3.

1 ♀. Lipis.

A very rufous individual.

27. TUPAIA MALACCANA, ANDERSON.

Tupaia malaccana, Anderson, Anatomical and Zoological Researches, 1878, p. 134.

Tupaia javanica, Ridley, p. 58.

1 ♂. Lipis.

28. GALEOPTERUS PENINSULE, THOS.

Galeopterus peninsule, Thos., Ann. and Mag. Nat. Hist., (8), ii, 1908, p. 303.

Galeopithecus volans, Ridley, p. 58.

1 ♀. Bentong.

A very ashy-backed example.

29. MEGADERMA SPASMA TRIFOLIUM, GEOFF.

2 ♂; 1 ♀. Bentong.

A common House-bat.

BIRDS.

PHASIANIDÆ.

1. ROLLULUS ROULROUL (SCOP.).

Rollulus roulroul, Hartert, p. 539; Grant, p. 57.

1 ♂. Lipis.

2. ARGUSIANUS ARGUS (LINN.).

Argusianus argus, Hartert, p. 538; Grant, p. 56.

1 ♀. Bentong.

COLUMBIDÆ.

3. *TRERON NIPALENSIS*, HODGS.

Treron nipalensis, Grant, p. 54.

1 ♂. Lipis.

4. *MACROPYGIA RUFICEPS* (TEMML.).

Macropygia ruficeps (? an sp. nov.), Hartert, p. 541.

Macropygia ruficeps, Grant, p. 53.

1 ♂; 2 ♀. Bentong.

RALLIDÆ.

5. *RALLINA FASCJATA* (RAFFLES).

1 ♂. Lipis.

ANATIDÆ.

6. *DENDROCYGNA JAVANICA* (HORSE.).

Dendrocygna javanica, Kelsall, p. 65; Hartert, p. 541.

FALCONIDÆ.

7. *SPILORNIS PALLIDUS* (WALDEN).

Spilornis bacha (? subsp.), Hartert, p. 541.

Spilornis bacha, Grant, p. 52.

1 ♀. Lipis.

8. *MICROHIERAX FRINGILLARIUS* (DRAP.).

Microhierax fringillarius, Kelsall, p. 60; Hartert, p. 541; Grant, p. 52.

2 ♂; 4 ♀. Bentong.

PSITTACIDÆ.

9. *PSITTINUS INCERTUS* (SHAW).

Psittinus incertus, Kelsall, p. 64.

Psittinus malaccensis, Hartert, p. 542; Grant, p. 51.

5 ♂. Lipis.

2 ♂. Bentong.

10. *LORICULUS GALGULUS* (LINN.).

Loriculus galgulus, Hartert, p. 542; Grant, p. 51.

3 ♂. Lipis.

ALCEDINIDÆ.

11. *PELARGOPSIS MALACCENSIS*, SHARPE.

Pelargopsis malaccensis, Kelsall, p. 63; Grant, p. 50.

Pelargopsis javana malaccensis, Hartert, p. 542.

12. *ALCEDO EURYZONA*, TEMM.

Alcedo euryzona (sic!), Hartert, p. 542.

1 ♂. Lipis.

1 ♂. Bentong.

The only previous record for Pahang of this Kingfisher—rare in the Peninsula—seems to be the specimen cited by Hartert to which no exact locality is attached. We had believed the bird to be a frequenter of mountain streams, but the localities where the above examples were obtained are decidedly in the lowlands.

13. *ALCEDO MENINTING*, HORSE.*Alcedo meninting*, Kelsall, p. 63; Hartert, p. 543.

2 ♂; 1 ♀. Lipis.

14. *CEYX TRIDACTYLA* (PALL).

2 ♂; 1 ♀. Bentong.

15. *CEYX EUERYTHRA*, SHARPE.*Ceyx dillwynni*, Hartert, p. 543.*Ceyx euerythra*, Grant, p. 50.

1 ♂; 1 ♀. Lipis.

16. *HALCYON CONCRETUS* (TEMML).*Halcyon concretus*, Grant, p. 49.

1 ♀. Bentong.

BUCEROTIDÆ.

17. *BUCEROS RHINOCEROS* (LINN.).*Buceros rhinoceros*, Kelsall, p. 64; Hartert, p. 543.

1 ♂. Bentong.

18. *BERENICORNIS COMATUS* (RAFFLES).

1 ♂; 2 ♀. Bentong.

MEROPIDÆ.

19. *MEROPS SUMATRANUS* (RAFFLES).*Merops sumatranus*, Kelsall, p. 63.

3 ♂; 2 ♀. Lipis.

20. *NYCTIORNIS AMICTA* (TEMML).*Nyctiornis amicta*, Kelsall, p. 63; Hartert, p. 544; Grant, p. 49.

1 ♀. Lipis.

1 ♂. Bentong.

CAPRIMULGIDÆ.

21. *CAPRIMULGUS AMBIGUUS*, HARTERT.(?) *Caprimulgus macrurus*, Kelsall, p. 63; Hartert, p. 544.

1 ♀. Lipis.

CYPSELIDÆ.

22. *COLLOCALIA INEXPECTATA*, HUME.

1 ♂. Bentong.

23. *CHAETURA LEUCOPYGIALIS*, BLYTH.*Chaetura leucopygialis*, Grant, p. 46.

2 ♂; 1 ♀. Bentong.

24. *MACROPTERYX COMATA* (TEMML).*Macropteryx comatus*, Kelsall, p. 63; Hartert, p. 544; Grant, p. 47.

1 ♂. Bentong.

TROGONIDÆ.

25. *PYROTROGON DUVAUCELI* (TEMML).*Harpactes duvauceli*, Kelsall, p. 64.*Pyrotrogon duvauceli*, Hartert, p. 544.

1 ♂. Lipis.

1 ♂; 1 ♀. Bentong.

CUCULIDÆ.

26. *SURNICULUS LUGUBRIS* (HORST.).

Surniculus lugubris, Hartert, p. 544; Grant, p. 45.

2 ♂; 1 ♀. Bentong.

27. *CACOMANTIS MERULINUS* (SCOP.).

Cacomantis passerinus, Kelsall, p. 64.

Cacomantis merulinus, Hartert, p. 544.

1 ♂. Bentong.

28. *RHODYTES DIARDI* (LESS.).

Rhodytes diardi, Hartert, p. 545; Grant, p. 44.

1 ♂. Lipis.

29. *RHINORTHA CHLOROPHÆA* (RAFFLES).

Rhinortha chlorophæa, Kelsall, p. 64; Hartert, p. 545; Grant, p. 44.

1 ♂. Lipis.

1 ♀. Bentong.

30. *UROCOCCYX ERYTHROGNATHUS* (HARTL.).

Phoenicopus erythrognaethus, Hartert, p. 546.

Urococcyx erythrognaethus, Grant, p. 44.

1 ♀. Bentong.

CAPITONIDÆ.

31. *CALORHAMPUS HAYI* (J. E. GREY).

Calorhampus hayi, Kelsall, p. 64; Hartert, p. 546; Grant, p. 43.

2 ♂. Lipis.

4 ♂; 1 ♀. Bentong.

An immature individual from Lipis is strongly suffused with green both above and below, and the wing-coverts are tipped with ferruginous.

32. *CHOTORHEA CHRYSOPOGON* (TEMM.).

Chotorhea chrysopogon, Grant, p. 43.

2 ♂; 1 ♀. Bentong.

33. *CHOTORHEA VERSICOLOR* (RAFFLES).

1 ♂. Bentong.

34. *CHOTORHEA MYSTACOPHANES* (TEMM.).

2 ♂. Bentong.

35. *CYANOPS HENRICI* (TEMM.).

Cyanops henrici, Kelsall, p. 64.

1 ♂; 1 ♀. Lipis.

3 ♂. Bentong.

36. *MESOBUCCO DUVAUCELI* (LESS.).

Mesobucco duvauceli, Grant, p. 42.

2 ♂; 1 ♀. Lipis.

1 ♂. Bentong.

Of the specimens from Lipis, the first has clear black sinciput, ear-coverts, malar stripe and gular pouch; the second has the feathers of sinciput and gular pouch slightly tipped with blue and the ear-

coverts and malar stripe strongly washed with that colour; the third, a female, has sinciput and gular pouch completely obscured with blue, the ear-coverts are likewise blue and the malar stripe is greenish-blue. The Bentong specimen has black sinciput and malar stripe, the ear-coverts are greenish and the gular patch is much reduced. In certain areas at least the differences of colour which have given rise to two names appear largely due to differences of age and sex. Grant (Fasc. Mal. Zool., Report on the Birds, p. 102) records the black-eared form, *C. duvauceli*, from so far north as Nawngchik in Patani: on the other hand, Trang birds are decidedly *C. cyanotis* as are also examples from Trengganu.

PICIDÆ.

37. *GEVINUS OBSERVANDUS*, HARTERT.

Gecinus puniceus observandus, Hartert, p. 547.

Gecinus puniceus, Kelsall, p. 64; Grant, p. 41.

1 ♀. Lipis.

38. *GEVINULUS VIRIDIS*, BLYTH.

2 ♂. Bentong.

39. *IYNGIPICUS CANICAPILLUS*, BLYTH.

Yungipicus canicapillus, Hartert, p. 547.

(?) *Iyungipicus auritus*, Kelsall, p. 64.

2 ♀. Lipis.

40. *PYRRHOPICUS PORPHYROMELAS* (BOIE).

Leptocestes porphyromelas, Kelsall, p. 64.

Pyrrhopicus porphyromelas, Grant, p. 40.

1 ♂; 2 ♀. Bentong.

41. *MIGLYPTES GRAMMITHORAX* (MALH.).

Miglyptes grammithorax, Kelsall, p. 64; Hartert, p. 547; Grant, p. 41.

2 ♂; 1 ♀. Lipis.

1 ♂. Bentong.

42. *MIGLYPTES TUKKI* (LESS.).

Miglyptes tukki, Kelsall, p. 64; Hartert, p. 547; Grant, p. 40.

1 ♀. Lipis.

43. *MICROPTERNUS BRACHYURUS* (VIEILL.).

Micropternus brachyurus, Kelsall, p. 64; Hartert, p. 547; Grant, p. 41.

2 ♂. Lipis.

1 ♀. Bentong.

44. *CHRY SOPHLEGMA MALACCENSE* (LATH.).

Chrysophlegma malaccense, Kelsall, p. 64; Grant, p. 41.

Chrysophlegma miniatus malaccensis, Hartert, p. 546.

2 ♀. Bentong.

45. *CHRY SOPHLEGMA HUMII*, HARGITT.

Chrysophlegma humii, Kelsall, p. 64; Hartert, p. 546; Grant, p. 41.

3 ♀. Lipis.

2 ♂. Bentong.

46. CHRYSOCOLAPTES VALIDUS (TEMML.).

Chrysocolaptes validus, Grant, p. 41.*Chrysocolaptes rallidus*, Kelsall, p. 64.

1 ♂; 2 ♀. Lipis.

47. HEMICERCUS SORDIDUS (EXTON).

Hemicercus concretus sordidus, Hartert, p. 547.

1 ♀. Lipis.

2 ♂. Bentong.

The two specimens from Bentong are immature. In one, forehead, crown and crest are equally mingled rufous-buff and slaty-grey, the terminations of the crest feathers being faintly tinged orange-red; in the second, forehead and crown are rufous-buff, the feathers having slaty terminations, and the crest is orange-red, rufous-buff towards the end, the extreme terminations of the feathers being slaty.

48. ALOPHONERPES PULVURENTUS (TEMML.).

Humilophus pulvurentus, Kelsall, p. 64.

1 ♀. Lipis.

49. THRIPONAX JAVENSIS (HORSF.).

Thriponax javensis, Kelsall, p. 64.

1 ♂; 2 ♀. Lipis.

50. SASIA EVERETTI, HARGITT.

Sasia abnormis everetti, Hartert, p. 547.*Sasia abnormis*, Grant, p. 40.

1 ♂. Lipis.

1 ♂. Bentong.

The example from Bentong is immature and agrees in every respect with the description of the type (Hargitt, C.B.M., xviii, p. 559).

EURYLAEMIDÆ.

51. CALYPTOMENA VIRIDIS, RAFFLES.

Calyptomena viridis, Kelsall, p. 63; Hartert, p. 548; Grant, p. 38.

2 ♂; 1 ♀. Lipis.

3 ♂; 2 ♀. Bentong.

52. EURYLAEMUS JAVANICUS, HORSF.

Eurylaemus javanicus, Kelsall, p. 53; Hartert, p. 548; Grant, p. 39.

1 ♀. Bentong.

53. EURYLAEMUS OCHROMELAS, RAFFLES.

Eurylaemus ochromelas, Kelsall, p. 63; Grant, p. 39.

4 ♂. Lipis.

2 ♂; 1 ♀. Bentong.

The female from Bentong is immature. It differs above from adult specimens in having the white collar faintly washed with yellow on the nape. Below there is no black gorget and the chin and upper throat are dusky only, the feathers being particoloured black and white and faintly washed yellow. Breast and abdomen are yellow, the dusky bases of the feathers showing on the breast, sides and flanks and down the

centre of the breast is a stripe of pale vinous purple. The subterminal spots on the tail are yellowish white, and there is a yellow supercilium extending from the nostril half-way over the eye.

54. CYMBORHYNCHUS MALACCENSIS, SALVAD.

Cymborhynchus macrorhynchus, Kelsall, p. 63; Grant, p. 39.

Cymborhynchus macrorhynchus lemniscatus, Hartert, p. 548

4 ♂; 2 ♀. Lipis.

1 ♂; 3 ♀. Bentong.

PITTIDÆ.

55. EUCICHLA BOSCHII, M. & S.

Pitta boschi, Kelsall, p. 63.

Eucichla irena, Hartert, p. 549.

1 ♀. Bentong.

Though common in Trang and other Siamese States, this *Pitta* is rare in the southern portion of the Peninsula and has been obtained recently only at Lenggong and Temengoh, Upper Perak, and at the above place. The locality, "Malacca," given for so many of the older specimens has now little value as it merely indicates that the skins came from a region on the west coast stretching from, and often including, Singapore to Penang.

HIRUNDINIDÆ.

56. HIRUNDO BADIA, CASS.

Hirundo badia, Kelsall, p. 63.

1 ♂; 1 ♀. Lipis.

MUSCICAPIDÆ.

57. CYORNIS SUMATRENSIS, SHARPE.

Cyornis sumatrensis, Hartert, p. 549.

1 ♀. Bentong.

58. ERYTHROMYIAS MUELLERI (BLYTH.).

Erythromyias muelleri, Hartert, p. 351.

1 ♂. Lipis.

1 ♂; 1 ♀. Bentong.

59. HYPOTHYMIS AZUREA (BODD.).

Hypothymis azurea, Hartert, p. 552; Grant, p. 37.

2 ♂; 1 ♀. Lipis.

2 ♂. Bentong.

60. RHIPIDURA PERLATA (S. MÜLL.).

Rhipidura perlata, Kelsall, p. 61; Hartert, p. 552; Grant, p. 36.

1 ♂. Bentong.

61. RHIPIDURA JAVANICA (SPARRM.).

Rhipidura javanica, Kelsall, p. 61.

1 ♂. Lipis.

62. TERPSIPHONE AFFINIS (BLUTH.).

Terpsiphone affinis, Kelsall, p. 61; Hartert, p. 553; Grant, p. 37.

3 ♂; 1 ♀. Bentong.

Two of the males show the beautiful black and white adult plumage.

63. PHILENTOMA VELATUM (TEMM.).

Philentoma velatum, Kelsall, p. 61; Hartert, p. 553; Grant, p. 36.

1 ♂. Lipis.

1 ♂. Bentong.

64. PHILENTOMA PYRRHOPTERUM (TEMM.).

Philentoma pyrrhopterum, Kelsall, p. 61; Hartert, p. 553; Grant, p. 36.

1 ♂; 1 ♀. Lipis.

2 ♂; 1 ♀. Bentong.

65. RHINOMYIAS PECTORALIS (SALVAD.).

Rhinomyias pectoralis, Hartert, p. 553.

1 specimen. Lipis.

66. CULICAPA CEYLONENSIS (SWAINS.).

Culicapa ceylonensis, Hartert, p. 553; Grant, p. 35.

2 ♂. Bentong.

67. ABRORNIS SCHWANERI (TEMM.).

2 ♀. Bentong.

CAMPOPHAGIDÆ.

68. PERICROCOTUS FLAMMIFER, HUME.

2 ♂. Bentong.

PYCNONOTIDÆ.

69. ÆGITHINA VIRIDISSIMA (BP.).

Ægithina viridissima, Grant, p. 33.

1 ♂; 1 ♀. Lipis.

1 ♀. Bentong.

70. ÆGITHINA TIPHIA (LINN.).

Ægithina tiphia, Kelsall, p. 61; Hartert, p. 537.

1 ♂; 1 ♀. Lipis.

71. CHLOROPSIS ZOSTEROPS (VIG.).

Chloropsis zosterops, Kelsall, p. 61; Grant, p. 33.

1 ♀. Lipis.

4 ♂; 2 ♀. Bentong.

72. CHLOROPSIS ICTEROCEPHALA (LESS.).

Chloropsis icterocephala, Hartert, p. 537; Grant, p. 53.

2 ♂; 2 ♀. Lipis.

1 ♂; 2 ♀. Bentong.

73. CHLOROPSIS CYANOPOGON (TEMM.).

Chloropsis cynopogon, Hartert, p. 537; Grant, p. 33.

1 ♂. Bentong.

74. IRENA CYANEA, BEGBIE.

Irena cyanea, Kelsall, p. 62; Hartert, p. 537; Grant, p. 33.

1 ♂. Lipis.

1 ♀. Bentong.

75. HEMIXUS MALACCENSIS (BLYTH).

Hemixus malaccensis, Hartert, p. 538; Grant, p. 33.

1 ♂. Lipis.

76. IOLE OLIVACEA, BLYTH.

Iole olivacea, Hartert, p. 538; Grant, p. 32.

1 ♂; 1 ♀. Lipis.

1 ♂; 1 ♀. Bentong.

77. MICROTARSUS MELANOCEPHALUS (GM.).

2 ♂. Lipis.

2 ♂; 2 ♀. Bentong.

78. MICROTARSUS MELANOLEUCUS (EYTON).

Micropus melanoleucus, Grant, p. 32.

1 ♀. Lipis.

79. CRINIGER TEPHROGENYS, J. & S.

Criniger tephrogenys, Hartert, p. 538; Grant, p. 31.

1 ♀. Lipis.

2 ♂. Bentong.

80. CRINIGER FINSCI, SALVAD.

Criniger finschii, Hartert, p. 560.

1 ♀. Lipis.

1 ♂. Bentong.

81. ALOPHOIXUS PHAEOCEPHALUS (HARTL.).

Criniger phaeocephalus, Kelsall, p. 61; Grant, p. 32.*Alophoixus phaeocephalus*, Hartert, p. 560.

3 ♂. Bentong.

82. TRICHOLESTES CRINIGER (BLYTH).

Tricholestes criniger, Hartert, p. 560; Grant, p. 31.

3 ♂; 2 ♀. Lipis.

1 ♂; 1 ♀. Bentong.

83. TRACHYCOMUS OCHROCEPHALUS (GM.).

Trachycomus ochrocephalus, Kelsall, p. 62.

1 ♂; 1 ♀. Bentong.

84. PYCNONOTUS ANALIS (HORSE.).

Pycnonotus analis, Kelsall, p. 62.*Pycnonotus goiavier analis*, Hartert, p. 560.

1 ♂. Lipis.

1 ♀. Bentong.

85. PYCNONOTUS FINLAYSONI (STRICKL.).

Pycnonotus finlaysoni, Hartert, p. 560.

2 ♂. Lipis.

2 ♂. Bentong.

86. PYCNONOTUS PLUMOSUS, BLYTH.

Pycnonotus plumosus, Kelsall, p. 62.

2 ♂. Lipis.

1 ♂; 1 ♀. Bentong.

87. PYCNONOTUS SIMPLEX, LESS.

Pycnonotus simplex, Hartert, p. 560; Grant, p. 31.

1 ♂. Bentong.

88. PYCNONOTUS SALVADORII, SHARPE.

Pycnonotus salvadorii, Hartert, p. 561.

1 ♀. Bentong.

89. RUBIGULA CYANIVENTRIS (BLYTH).

Rubigula cyaniventris, Hartert, p. 561; Grant, p. 31.

2 ♂. Bentong.

TIMELIIDÆ.

90. POMATORHINUS BORNEENSIS, CAB.

Pomatorhinus borneensis, Hartert, p. 562.

1 ♂. Bentong.

91. TURDINUS OLIVACEUS (STRICKL.).

Turdinus abboti, Kelsall, p. 62; Grant, p. 29.*Turdinus abboti olivaceum*, Hartert, p. 562.

4 ♂; 2 ♀. Lipis.

1 ♂. Bentong.

92. TURDINUS SEPIARIUS (HORSE.).

Turdinus sepiaria (? subsp. nov.), Hartert, p. 563.

1 ♂. Bentong.

Differs from the last species, which it very closely resembles, in its slightly smaller size, lighter bill, dark legs and feet and richer and darker upper surface, besides lacking the pale shaft-stripes to the crown-feathers possessed by *T. olivaceus*.

93. TURDINUS MAGNIROSTRIS, MOORE.

Turdinus magnirostris, Kelsall, p. 62.*Malacopteron magnirostris*, Hartert, p. 563.*Malacopteron magnirostre*, Grant, p. 29.

1 ♂; 1 ♀. Bentong.

94. TURDINUS MACRODACTYLUS, STRICKL.

Turdinus macrodactylus, Kelsall, p. 62.

1 ♀. Bentong.

95. ERYTHROCICHLA BICOLOR (LESS.).

Erythrocichla bicolor, Hartert, p. 563.

2 ♂. Lipis.

2 ♂. Bentong.

96. DRYMOCATAPHUS NIGRICAPITATUS (BLYTH).

Drymocataphus nigricapitatus, Kelsall, p. 62; Grant, p. 29.

4 ♂. Lipis.

2 ♂; 1 ♀. Bentong.

97. *ETHOSTOMA ROSTRATUM* (BLYTH).*Trichastoma rostratum*, Hartert, p. 563.

2 ♂. Lipis.

2 ♀. Bentong.

98. *SETARIA MAGNA* (EYTON).*Malacopteron magnum*, Kelsall, p. 62.*Malacopteron magnum*, Hartert, p. 563.

1 ♂. Lipis.

2 ♂. Bentong.

99. *SETARIA CINEREA* (EYTON).*Malacopteron cinereus*, Hartert, p. 564.

1 ♂; 1 ♀. Lipis.

1 ♂; 2 ♀. Bentong.

100. *SETARIA AFFINIS* (BLYTH).(?) *Malacopteron melanocephalum*, Hartert, p. 565.

4 ♂; 2 ♀. Lipis.

Though the type of *Setaria melanocephala* (Davison) came from Kuala Tembeling, a locality less than 20 miles from Lipis, and Hartert records one other example from the Pahang lowlands, I prefer to list these specimens as *S. affinis*. According to Hartert the latter differs from *S. affinis* in its "deeper blackish crown, less rufous, more deep brown tail, slightly darker back." I have compared the present examples with an equal number of *S. affinis* from the vicinity of Kuala Lumpur and can detect no constant differences. Davison's single individual was apparently compared with *S. albigularis*, a very different bird, and it is quite possible to pick out from a series obtained at the same locality and time, one specimen differing from another to the extent of which Hartert separates *S. melanocephala* from *S. affinis*. The type of the previous species which belongs to the Raffles Museum, Singapore, is before me at the present moment: it has suffered much from careless treatment and is now of little value in settling the question, but I cannot recognise it as being in any way different from the series of twelve examples mentioned above.

101. *ANUROPSIS MALACCENSIS*, HARTL.*Anuropsis malaccensis*, Grant, p. 29.

1 ♂. Lipis.

3 ♂; 1 ♀. Bentong.

102. *ALCIPPE CINEREA* (BLYTH).*Alcippe cinerea*, Hartert, p. 566; Grant, p. 28.

1 ♀. Lipis.

3 ♂; 1 ♀. Bentong.

103. *STACHYRIS POLIOCEPHALA* (TEMN.).*Stachyris poliocephala*, Hartert, p. 566; Grant, p. 28.

1 ♂. Lipis.

2 ♂; 4 ♀. Bentong.

104. STACHYRIS MACULATA (TEMM.).

Stachyris maculata, Hartert, p. 566.

2 ♂; 1 ♀. Lipis.

1 ♀. Bentong.

105. CYANODERMA ERYTHROPTERUM (BLYTH).

Mixornis erythropterus, Kelsall, p. 62.

Cyanoderma erythroptera, Grant, p. 27.

1 ♂; 1 ♀. Lipis.

1 ♂. Bentong.

106. MACRONUS PTILOSUS, J. & S.

Macronus ptilosus, Kelsall, p. 62; Grant, p. 27.

3 ♂; 2 ♀. Lipis.

107. MIXORNIS GULARIS (RAFFLES).

Mixornis gularis, Kelsall, p. 62; Hartert, p. 567.

1 ♂; 1 ♀. Lipis.

2 ♂. Bentong.

108. HERPORNIS XANTHOLEUCA, HODGS.

Herpornis xantholeuca, Grant, p. 25.

Erpornis xantholeuca, Hartert, p. 568.

1 ♂. Bentong.

TURDIDÆ.

109. HYDROCICHLA RUFICAPILLA (TEMM.).

Hydrocichla ruficapilla, Kelsall, p. 62; Hartert, p. 570.

6 ♂; 3 ♀. Bentong.

One of the males is immature. It differs from adults in being less intense in colour, head and back being rufous rather than orange-chestnut and the black areas varying from brown to sooty. The terminations of the feathers of the lower breast are rufous brown and the sides are washed with the same colour. The black frontal and rump bands are hardly traceable and the white termination of the tail feathers are only just beginning to appear, while the throat is mingled black and white. Hartert has pointed out that the white throat on which Sharpe founded *H. rufidorsalis* is part of the immature plumage of this species.

110. HYDROCICHLA FRONTALIS (BLYTH).

1 ♀. Lipis.

A species rarely obtained in the south of the Peninsula.

111. CITTOCINCLA MACRURA (GM.).

Cittocincla tricolor, Kelsall, p. 62; Grant, p. 23.

Kittacincla macrurus, Hartert, p. 571.

1 ♂; 1 ♀. Lipis.

1 ♂. Bentong.

SYLVIIDÆ.

112. ORTHOTOMUS RUFICEPS (LESS.).

Orthotomus ruficeps, Kelsall, p. 62.

1 ♀. Bentong.

113. ORTHOTOMUS CINERACEUS (BLYTH).

2 ♂. Lipis.

114. FRANKLINIA RUFESCENS (BLYTH).

1 ♂. Lipis.

1 ♂; 1 ♀. Bentong.

LANIIDÆ.

115. HEMIPUS OBSCURUS (HORSE.).

2 ♂. Lipis.

2 ♂. Bentong.

116. PLATYLOPHUS ARDESIACUS, CAB.

1 ♀. Lipis.

1 ♀. Bentong.

The Lipis specimen is immature. The feathers of the occiput are tipped with ferruginous as are the tertiaries and wing-coverts. The under surface is slaty-grey; the feathers of the throat have white terminations, and there is an irregular ferruginous band across the breast.

117. LANIUS CRISTATUS, LINN.

Lanius cristatus, Kelsall, p. 62.

1 ♂. Lipis.

PARIDÆ.

118. MELANOCHLORA FLAVOCRISTATA (LAFR.).

Melanochlora sultanea, Grant, p. 21.

1 ♀. Lipis.

CORVIDÆ.

119. CORVUS ENCA, HORSE.

Corone enca, Kelsall, p. 61.

1 ♀. Bentong.

120. PLATYSMURUS LEUCOPTERUS (TEMML.).

Platysmurus leucopterus, Kelsall, p. 61; Grant, p. 16.

3 ♂; 1 ♀. Lipis.

3 ♂; 2 ♀. Bentong.

DICRURIDÆ.

121. CHAPTIA MALAYENSIS (HAY.).

Chaptia ænea, Grant, p. 17.

2 ♂. Bentong.

122. DISSEMURUS PARADISEUS (LINN.).

Dissemurus platurus, Kelsall, p. 61.

Dissemurus paradiseus, Hartert, p. 579; Grant, p. 17.

3 ♂. Lipis.

2 ♂. Bentong.

STURNIDÆ.

123. EULABES JAVANENSIS (OSBECK).

Mainatus javanensis, Kelsall, p. 63.

Eulabes javanensis, Grant, p. 17.

Gracula javanus, Hartert, p. 579.

2 ♂. Lipis.

PLOCEIDÆ.

124. PLOCEUS INFORTUNATUS, HARTERT.

Ploceus baya, Kelsall, p. 63.

Ploceus passerinus infortunatus, Hartert, p. 577.

Ploceus atrigulara, Grant, p. 18.

2 ♂; 1 ♀. Lipis.

125. MUNIA ACUTICAUDA, HODGS.

Uroloncha acuticauda, Kelsall, p. 63.

Munia acuticauda, Hartert, p. 579; Grant, p. 18.

1 ♂. Lipis.

3 ♂. Bentong.

126. MUNIA LEUCOGASTRA (BLYTH).

Munia leucogastra, Hartert, p. 578; Grant, p. 17.

1 ♂. Lipis.

8 ♂; 4 ♀. Bentong.

This species was unrepresented, after years of collecting, in the Federated Malay States Museums until a single example was obtained at Temengoh, Upper Perak, in 1909. Now, we have this large series from Pahang, showing that it is common on the east side of the main range, and individuals have been obtained recently in the hills near Seremban, Negri Sembilan.

NECTARINIIDÆ.

127. ANTHOTHREPTES HYPOGRAMMICA (S. MÜLL.).

Anthothreptes hypogrammica, Kelsall, p. 62; Grant, p. 19.

Anthreptes hypogrammica, Hartert, p. 574.

1 ♂; 1 ♀. Lipis.

1 ♂. Bentong.

128. ANTHOTHREPTES MALACCENSIS (SCOP.).

Anthothreptes malaccensis, Kelsall, p. 62; Grant, p. 19.

Anthreptes malaccensis, Hartert, p. 573.

3 ♂; 2 ♀. Lipis.

129. CHALCOPARIA PLENICOTIS (GM.).

Chalcoparia singalensis, Hartert, p. 574.

1 ♂; 1 ♀. Bentong.

130. ARACHNOTHERA MODESTA, EYTON.

Arachnothera affinis modesta, Hartert, p. 574.

4 ♂; 1 ♀. Bentong.

151. ARACHNOTHERA LONGIROSTRIS (LATH.).

Arachnothera longirostra, Hartert, p. 574; Grant, p. 19.

1 ♂. Lipis.

1 ♂. Bentong.

132. ARACHNOTHERA CRASSIROSTRIS (REICHENB.).

1 ♀. Lipis.

DICÆIDÆ.

133. DICAËUM CRUENTATUM (LINN.).

Dicaeum cruentatum, Kelsall, p. 62; Grant p. 20.

2 ♂. Lipis.

134. PRIONICHILUS IGNICAPILLUS, EYTON.

1 ♂. Lipis.

135. PRIONICHILUS MACULATUS, TEMM.

Prionichilus maculatus, Hartert, p. 575; Grant, p. 20.

1 ♂. Bentong.

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A LIST OF A SMALL COLLECTION OF MAMMALS AND
BIRDS FROM THE MOUNTAINS OF ULU LANGAT,
SELANGOR.

By H. C. ROBINSON, C.M.Z.S., M.B.O.U.

UNTIL the present collection was made the southern limit of what has been termed the Himalayo-Sondaic element in the fauna of the Malay Peninsula had been placed at the Ginting Bidei Pass leading across the Main Range of the Peninsula from Selangor to Pahang, at an elevation of about 2,300 feet. On the mountains north of this line, above 3,000 feet, the dominant species of birds are of Himalayan or Sumatran facies, while further to the south on the hills of Negri Sembilan and on Mount Ophir on the Johore-Malaccan border, which approach or slightly exceed 4,000 feet, such forms are entirely absent.

The Massif on which the present collection was made at elevations slightly under and over 4,000 feet lies to the south-west of Ginting Bidei and attains in Bukit Nuang a maximum height of about 4,900 feet.

The actual locality visited was on the head-waters of the Langat river near the summit of a mountain known to the local Sakais as Menang Gasing. Five of the Dyak collectors of the Museums spent ten days there at the end of May and the commencement of June, 1911.

MAMMALS.

1. RATUFA MELANOPEPLA, MILLER.

Ratufa melanopepla, Miller, "Proc. Acad. Sci. Washington," ii, p. 71 (1900).

2 ♀.

These specimens agree well with a series of topotypes from Trang in the western Siamese Malay States. The species is not usually found at such an altitude as 4,000 feet.

2. SCIURUS NIGROVITTATUS JOHORENSIS, ROB. AND WROUGHT.

Sciurus nigrovittatus johorensis, Rob. and Wrought. ante, p. 166.

1 ♀.

Practically identical with the types of the sub-species from Southern Johore.

3. SCIURUS MINIATUS, MILLER.

Sciurus notatus miniatus, Miller, "Proc. Acad. Sci. Washington," ii, p. 79 (1900).

2 ♀.

Not differing from Trang topotypes.

4. SCIURUS TENUIS TAHAN, BONHOTE.

Sciurus tahan, Bonhote, "Journ. Fed. Malay States Mus.," iii, p. 6 (1908).

2 ♀.

Inseparable from a large series from the type locality and from more northern sections of the Selangor Main Range.

5. SCIURUS MACCLELLANDI NOVEMLINEATUS, MILLER.

Sciurus novemlineatus, Miller, "Proc. Biol. Soc. Washington," xvi, p. 147 (1903).

2 ♂, ♀.

This is the most southerly locality from which any form of this wide-spread species has been obtained. The locality, Malacca, which is assigned to it by Bonhote is almost certainly erroneous, except in the most generalised sense.

6. MUS CILIATUS, BONHOTE.

Mus ciliatus, Bonhote, P. Z. S. 1900, p. 879, pl. xvi.

2 ♂.

This species is only met with at considerable elevations and is on record from Gunong Inas (Perak), Gunong Mengkuang Lebah and Bukit Kutu (Selangor) and Gunong Tahan (Pahang), in each case from considerably above 3,000 feet. It is closely allied to *Mus edwardsi*, Thos., from Fokien, China.

7. MUS VOCIFERANS, MILLER.

Mus vociferans, Miller, "Proc. Biol. Soc. Washington," xiii, p. 1888 (1900).

A single female specimen.

This rat occurs everywhere in the Peninsula from as far north as has been zoologically explored to the extreme south and from sea level

to about 5,000 feet. The present case, however, is the only one in which it has been found associated with the preceding species from which it is nevertheless extremely distinct.

8. *MUS PELLAX*, MILLER.

Mus pellax, Miller, loc. cit, supra, p. 147.

A single female.

Widely distributed throughout the Peninsula, but not nearly so common as *Mus surifer*, Miller.

9. *TUPAIA FERRUGINEA FERRUGINEA*, RAFFLES.

Tupaia ferruginea, Raffles, "Trans. Linn. Soc.," xiii, p. 256 (1822).

1 ♂.

10. *HYLOMYS SUILLUS*, MÜLLER AND SCHLEGEL.

Hylomys suillus, Müll. and Schleg. "Verhandl. Mamm.," p. 153, pl. xxv, figs. 4-7, pl. xxvi, fig. 1 (1839-44).

A single female of this extremely rare insectivore was trapped but was almost destroyed by ants leaving little but a portion of the dorsal skin and the skull. It appears to lack the median dorsal stripe which is generally present in Bornean examples. The species is generally credited to the Malay Peninsula but we are unaware of the existence of any specimen from localities south of Southern Tenasserim, where it has been obtained by Dr. W. L. Abbott (*Lyon, Proc. U. S. Nat. Mus.*, xxxvi, p. 456, pl. 36 (1909)).

BIRDS.

* 1. *ARBORICOLA CAMPBELLI*, ROBINSON.

Arboricola campbelli, Robinson, "Journ., Fed. Mal. States. Mus.," ii., p. 167 (1909).

A pair.

2. *MACROPYGIA RUFICEPS* (TEMN.)

Op. cit. p. 170.

1 ♂.

3. *NYCTIORNIS AMICTA* (TEMN.)

Robinson, *op. cit.* p. 173.

* 4. *PYROTROGON ERYTHROCEPHALUS* (GOULD).

Op. cit. p. 176.

1 ♀.

5. *CYANOPS MYSTACOPHANES* (TEMN.).

Op. cit. p. 179.

1 ♂.

* 6. *CYANOPS OORTI* (MÜLLER).

Op. cit. p. 179.

2 ♂; 1 ♀.

* 7. *PSILOPOGON PYROLOPHUS* (MÜLLER).

Op. cit. p. 180.

1 ♂ imm.

‡ 8. *GEVINUS RODGERI*, HARTERT & BUTLER.

Op. cit. p. 180.

1 ♂; 1 ♂ imm.

9. *PYRRHOPICUS PORPHYROMELAS* (BOIE).

Op. cit. p. 182.

1 ♂.

10. *CHRYSOPHLEGMA HUMII*, HARGITT.

Op. cit. p. 183.

1 ♀.

11. *CALYPTOMENA VIRIDIS*, RAPFLES.

Op. cit. p. 184.

1 ♀.

† 12. *PSARISOMUS DALHOUSIAE* (JAMESON).

Op. cit. p. 184.

1 ♂; 1 ♀.

† 13. *SERILOPHUS ROTHSCILDI*, HARTERT & BUTLER.

Op. cit. p. 185.

1 ♀.

Since the date of my paper quoted above we have obtained additional specimens of this beautiful Broadbill at Temengoh, in Upper Perak, at comparatively low elevations not exceeding 500 feet.

* 14. *ANTHIPE MALAYANA*, SHARPE.

Op. cit., p. 188.

6 ♂.

* 15. *NILTAVA GRANDIS DECIPIENS*, SALVAD.

Op. cit., p. 188.

1 ♂, 1 ♀.

* 16. *CRYPTOLOPHA BUTLERI*, HARTERT.

Op. cit., p. 191.

1 ♀.

This species seems widely though sparsely distributed throughout the length of the Peninsular Main Range. In addition to the specimens recorded above we possess a skin collected at Telom, 3,500 feet, on the Perak-Pahang boundary in November, 1908.

17. *ABRORNIS SCHWANERI* (TEMM.).

Op. cit., p. 191.

1 ♀.

Widely distributed throughout the length of the Main Range from its foot to over 4,000 feet.

* 18. *ARTAMIDES LARUTENSIS*, SHARPE.

Op. cit., p. 192.

1 ♂.

* 19. *PERICROCOTUS MONTANUS*, SALVAD.

Op. cit., p. 192.

1 ♂, 1 ♀, 1 ♂ imm., 1 ♀ imm.

* 20. CHLOROPSIS HARDWICKII, JARD. & SELBY.

Op. cit., p. 193.

1 ♂.

21. HEMIXUS CINEREUS (BLYTH).

Op. cit., p. 193.

1 ♂.

* 22. IOLE TICKELLI PARACENSIS, HARTERT & BUTLER.

Iole peracensis, *op. cit.*, p. 194.

1 ♂.

23. CRINIGER OCHRACEUS, MOORE.

Op. cit., p. 195.

1 ♀.

* 24. TROCHALOPTERON PENINSULAE, SHARPE.

Op. cit., p. 197.

2 ♂ ; 1 ♀.

* 25. MELANOCICHLA LUGUBRIS (MÜLLER.)

Op. cit., p. 197.

1 ♂ ; 2 ♀.

* 26. POMATORHINUS WRAYI, SHARPE.

Op. cit., p. 197.

1 ♀.

* 27. RHINOCICHLA MITRATA (MÜLLER).

Op. cit., p. 197.

4 ♂.

* 28. TURDINUS LORICATUS (MÜLLER).

Op. cit., p. 199.

1 ♂.

In the Peninsula this species has hitherto only been found in Selangor between 2,000 and 4,000 feet.

† 29. TURDINULUS GRANTI, RICHMOND.

Op. cit., p. 201.

1 ♂.

* 30. CORYTHOCICHLA LEUCOSTICTA, SHARPE.

Op. cit., p. 201.

1 ♂ ; 1 ♀.

* 31. ALCIPPE PERACENSIS, SHARPE.

Op. cit., p. 201.

1 ♂ ; 2 ♀.

* 32. PSEUDOMINLA SOROR, SHARPE.

Op. cit., p. 201.

1 ♀.

* 33. STACHYRIS DAVISONI, SHARPE.

Op. cit., p. 202.

1 ♂ ; 1 ♀.

* 34. STACHYRIS CHRYSOPS, RICHMOND.

Stachyris chrysaea bocagei, *op. cit.* p. 202.

4 ♂.

* 35. BRACHYPTERYX, WRAYI, GRANT.

Op. cit. p. 204.

2 ♂, 2 ♀.

* 36. SIBIA WRAYI, GRANT.

Sibia wrayi, Grant, Bull. B.O.C. xxv, p. 98 (1910).*Sibia simillima*, Robinson, *op. cit.* p. 204.

1 ♂.

* 37. SIVA SORDIDIOR, SHARPE.

Op. cit. p. 204.

1 ♂.

* 38. PTERYTHIUS TAHANENSIS, HARTERT.

Op. cit. p. 205.

1 ♀.

* 39. MESIA ARGENTAUROS, HODGSON.

Op. cit. p. 205.

3 ♂.

* 40. PNOEPYGA LEPIDA, SALVAD.

Op. cit. p. 205.

1 ♂.

41. CITTOCINCLA MACRURA (GM.).

Op. cit. p. 208.

1 ♀ imm.

42. SUTORIA MACULICOLLIS (F. MOORE).

Op. cit. p. 208.

1 ♂.

* 43. DENDROPHILA AZUREA (LESS.).

Op. cit. p. 210.

1 ♂.

* 44. CISSA ROBINSONI, GRANT.

Op. cit. p. 210.

2 ♀.

The Blue Hunting-crow has now been found to be distributed over all the high mountains of the Federated Malay States at elevations exceeding 3,500 feet.

* 45. BHRINGA REMIFER (TEMM.).

Op. cit. p. 211.

1 ♂; 1 ♀.

* 46. ORIOLUS CONSANGUINEUS, WARDL-RAHS.

Op. cit. p. 211.

1 ♂; 1 ♀.

* 47. AETHOPYGA WRAYI, SHARPE.

Op. cit. p. 212.

1 ♂.

48. ARACHNOTHERA LONGIROSTRIS (LATH.).

Op. cit. p. 213.

1 ♂.

* 49. ARACHNOTHERA MAGNA (HODGS.).

Op. cit. p. 214.

3 ♂.

Out of the 49 species of birds procured, 33 (marked with an asterisk) are strictly confined, so far as the Peninsula is concerned, to the zone above 3,000 feet, while three (marked with a dagger) are of only accidental occurrence below that limit. Of the remainder, six may be classed as submontane while only seven are generally met with at low elevations.

Compared with the list of 86 species from the hills of Negri Sembilan (*antea*, p. 219) it will be observed that only ten species—*viz.* :

Macropygia ruficeps	Calypptomena viridis
Nyctiornis amicta	Abornis schwaneri
Chotorhea mystacophanes	Hemixus cinereus
Pyrrhopicus porphyromelas	Stachyris davisoni
Chrysophlegma humei	Cittocincla macrura

are common to both lists, while of these 10 species, seven are low-land species, three are submontane and none are high elevation forms.

It is, therefore, I think, fairly evident that at some comparatively recent time a barrier has existed between the mountains of Southern Selangor and their continuation in Negri Sembilan, sufficient to prevent the extension of the dominant continental and Sumatran form southwards. It is evident, also, that this barrier must have been a substantial one, as wide stretches of low country separating the Gunong Tahan Ranges from the backbone of the Peninsula have not sufficed to effect any specific differentiation in the fauna of the two ranges.

Such evidence as is afforded by the small number of mammals found at high elevations also bears out the same contention.



[Reprinted from "*Journal, Federated Malay States Museums*," Vol. IV,
Nos. 3 & 4.]

NOTES ON BIRDS NEW TO, OR RARE IN, THE MALAY
PENINSULA.

(SECOND SERIES.)

BY C. BODEN KLOSS, F.Z.S., M.B.O.U.

SINCE the first series of these notes was issued in the last number of this Journal, the Federated Malay States Museums have undertaken an expedition to Trang, Siamese Malaya, which has resulted in the addition of a large number of rare and interesting species to their collections and the results have been dealt with at length in papers to be found in the "Ibis" for October, 1910, and January, 1911.

The species now commented on have been obtained in the ordinary way of collecting at various localities in the Federated Malay States.

GALLINAGO MEGALA, SWINH.

Gallinago megala, Sharpe, *Cat. Birds Brit. Mus.*, xxiv., p. 479 (1896); Robinson, *Journ. F.M.S. Mus.*, iv., p. 130 (1909).

Since the first specimen was recorded by Robinson from the neighbourhood of Kuala Lumpur in 1909, Seimund has obtained two more examples in the vicinity of Taiping, Perak. Now that the species is known to occur here it will probably be noticed in fair numbers in future.

MILVUS GOVINDA, SYKES.

Milvus govinda, Sharpe, *Cat. Birds Brit. Mus.*, i., p. 325 (1874); Blanford, *Faun. Brit. Ind. Birds*, iii., p. 374 (1895).

The common Pariah Kite has not often been recorded from the Malay Peninsula; an example was shot near Taiping, Perak, in November, 1910, and it has been obtained in Penang (Cantor), Singapore (Kelham), and near Klang by Davison.

SYRNIUM MAINGAYI, HUME.

Syrnium maingayi, Hume, *Stray Feathers*, vi., p. 27 (1878); Blanford, *Faun. Brit. Ind. Birds*, iii., p. 276 (1895).

An example of the rare Malayan Wood-Owl was shot in the Semangko Pass, 2,700 feet, in April, and in June, 1910, another was obtained near Taiping by Seimund. Specimens from Kuala Tembeling, Pahang; Ginting Bidei, 2,300 feet, Selangor; and from Trang, Siamese Malaya, had previously been in the collections of the Federated Malay States Museums.

PHALACROCORAX CARBO, LINN.

Phalacrocorax carbo, Blanford, *Faun. Brit. Ind. Birds*, iv., p. 340 (1898); Grant, *Cat. Birds Brit. Mus.*, xxvi., p. 340 (1898).

The Cormorant is exceedingly rare in the southern half of the Malay Peninsula. A specimen was collected by Wray on the Batang Padang River near Tapah, South Perak, about fifteen years ago; a second example was obtained by Kloss on a fresh-water pond at Johore Bahru in 1904, and in July, 1910, Seimund shot a third on the small lake at Taiping, Perak. North of the Kelantan River on the East Coast and in Patani Bay it is not uncommon.

PELECANUS PHILIPPENSIS, GM.

Pelecanus philippensis, Blanford, *Faun. Brit. Ind. Birds*, iv., p. 335 (1898); Grant, *Cat. Birds Brit. Mus.*, xxvi., p. 471 (1898).

A single example of the Spotted-billed Pelecan was taken near Taiping, Perak, some years ago, and in July, 1910, a second individual was obtained in the same locality.

ALCEDO EURYZONA, TEMM.

Alcedo euryzona, Sharpe, *Cat. Birds Brit. Mus.*, xvii., p. 154 (1892); Blanford, *Faun. Brit. Ind. Birds*, iii., p. 126 (1895); Robinson, *Journ. F.M.S. Mus.*, ii., p. 172 (1909).

The Broad-zoned Kingfisher is a rare bird in the Federated Malay States and has long been represented in its Museums by a single female captured by Wray on the Larut Hills near Taiping, Perak. In December, 1909, three examples were collected in the mountains forming the Trang-Patelung boundary; in 1910 a fifth was obtained near Kuala Lipis, and a sixth near Bentong, Pahang, while the last collected to date was shot in the mountains of Negri Sembilan about 15 miles N.-E. of Seremban by Mr. V. Knight.

GERYGONE MODIGLIANII, SALVAD.

Gerygone modiglianii, *Salvad., Ann. Mus. Civ. Genov.* (2), xii., p. 71 (1891); *Robinson, Hand-list of Birds of the Malay Peninsula*, p. 13, note (1910).

Gerygone pectoralis, *Davison, Ibis*, 1892.

A pair of these little Grey-and-yellow Flycatchers was obtained in the grounds of the Perak Museum at Taiping in September, 1909. The species is decidedly rare in the Peninsula, being known previously by single examples from Kuala Pahang, Gunong Tahan and from Trang, Siamese Malaya.

RHINOMYIAS PECTORALIS (SALVAD.).

Rhinomyias pectoralis, *Hartert, Nov. Zool.*, ix., p. 553 (1902); *Robinson, Hand-list of Birds of the Malay Peninsula*, Kuala Lumpur, 1910.

This Brown Flycatcher is not common in the Peninsula. A specimen was shot at Kuala Lipis in May of this year and it has previously been obtained in Pahang by Waterstradt on Gunong Tahan and Robinson at Kuala Teku. The Museums have also a few specimens from Perak and Selangor.

PYCNONOTUS ROBINSONI, OGILVIE-GRANT.

Pycnonotus robinsoni, *Ogilvie-Grant, Fasciculi Malayenses, Zool.*, iii., *Report on the Birds*, p. 85 (1905).

An adult female of this species, previously only known by two examples from Patani, was obtained in December, 1909, at Chong, Trang, and was overlooked when the "Ibis" paper already referred to was drawn up.

This Bulbul approaches *P. blanfordi* and differs from *P. plumosus*, which occurs in the same localities, in the possession of pale and dull upper-parts, faint greenish edges to the wing feathers, yellowish-white throat and under-parts and in a somewhat rounded culmen to the bill. It was originally compared with *P. cinereifrons* from Palawan Island but more nearly resembles *P. blanfordi*, of which it is probably the Malayan representative, apparently differing only in having the silvery-white area of cheeks and ear coverts slightly reduced in extent.

KENOPIA STRIATA (BLYTH).

Kenopia striata, Sharpe, *Cat. Birds Brit. Mus.*, vii., p. 573 (1883); *Hartert, Nov. Zool.*, ix., p. 567 (1902).

The White-flecked Babbler is not often met with in the Peninsula. Abbott obtained it in Trang, Siamese Malaya, in 1899 (where the F.M.S. Museums also got a specimen in 1910). Waterstradt on Gunong Tahan two years later, Kloss shot one individual near Gunong Pulai, S. Johor, in 1904, and in July, 1909, Robinson and Kloss trapped another example at Temengoh, Upper Perak. No others seem to have been recorded for many years.

PETROPHILA CYANEA (LINN.).

Petrophila cyanea, Blanford, *Faun. Brit. Ind. Birds*, vol. ii., p. 146 (1898); *Petrophila cyaneus*, Robinson, *Journ. F.M.S. Mus.*, vol. ii., No. 4, 1909, p. 207.

A male was obtained at the Batu Caves near Kuala Lumpur by Kloss in August, 1908, and on 24th May, 1910, a second specimen, a female, was shot at the same place by Mr. C. B. Holman-Hunt.

NOTODELA LEUCURA (HODGS.).

Notodela leucura, Sharpe, *Cat. Birds Brit. Mus.*, vii., p. 23 (1883); Robinson, *Hand-list of the Birds of the Malay Peninsula*, p. 17, note (1910); Oates, *Faun. Brit. Ind. Birds*, i., p. 113 (1889).

Until recently the White-tailed Blue Robin was known from the Peninsula by a single specimen collected by Butler on the Larut Hills, Perak. In August, 1909, specimens were for the second time obtained in the Peninsula from the same locality by Robinson and Kloss.

LANIUS BENTET (HORSE.).

Lanius bentet, Gadow, *Cat. Birds Brit. Mus.*, viii., p. 263 (1883); Oates, *Faun. Brit. Ind. Birds*, i., p. 465 (1889); Robinson, *Hand-list of Birds of the Malay Peninsula*, p. 17, note (1910).

This handsome Long-tailed Shrike is an exceedingly rare bird in the Malay Peninsula and until Seimund shot four specimens near Kuala Lumpur in December, 1909, was unrepresented in the F.M.S. Museums.

MUNIA LEUCOGASTRA (BLYTH).

Uroloncha leucogastra, Sharpe, *Cat. Birds Brit. Mus.*, xiii., p. 362 (1890); Oates, *Faun. Brit. Ind. Birds*, ii., p. 186 (1890); Hartert, *Nov. Zool.*, ix., p. 578 (1902); Grant *Journ. F.M.S. Mus.*, iii., p. 17 (1908).

The White-bellied Munia was lacking from the F.M.S. Museums collections until a specimen was obtained at Temengoh, Upper Perak, in August, 1909. Since then it has been taken in Negri Sembilan but it appears to be uncommon in the Western States; though it has turned up in large numbers from the lowlands of Pahang.

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Nos. 3 & 4.]

Robert H. Brown
has been
new to the Malay Peninsula

ON A HORNED OWL, NEW TO THE MALAY
PENINSULA.

By HERBERT C. ROBINSON, C.M.Z.S., M.B.O.U.

BUBO COROMANDUS. KLOSSII, subsp. nov.

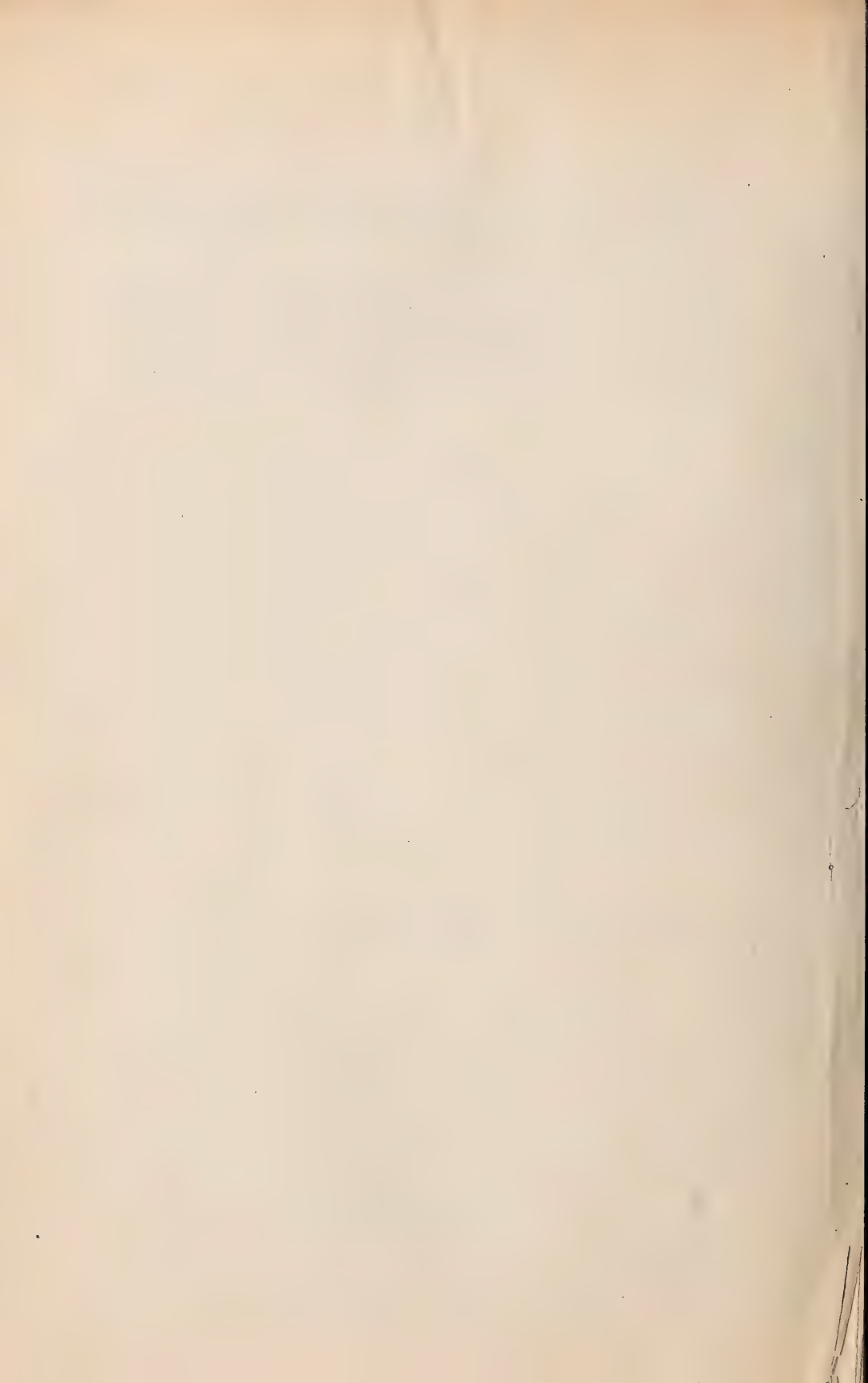
A LOCAL race of *Bubo coromandus* from Peninsular India but very much darker than the typical form.

ADULT MALE.—Above dull brown, head, ear-coverts and mantle slightly darker; the nape and outer webs of the secondaries vermiculated with whitish brown, the former with dark shaft stripes. The under-surface throughout vermiculated with dark brown and whitish-brown and with broad blackish-brown shaft stripes. Feathers of the thighs, under wing-coverts and under tail-coverts similar but more buff. Iris yellow, bill greenish-horn with black base, feet leaden. Total length, 21.5; wing, 15.7; tail, 8.7; tarsus, 2.55; bill from gape, 1.55 inch.

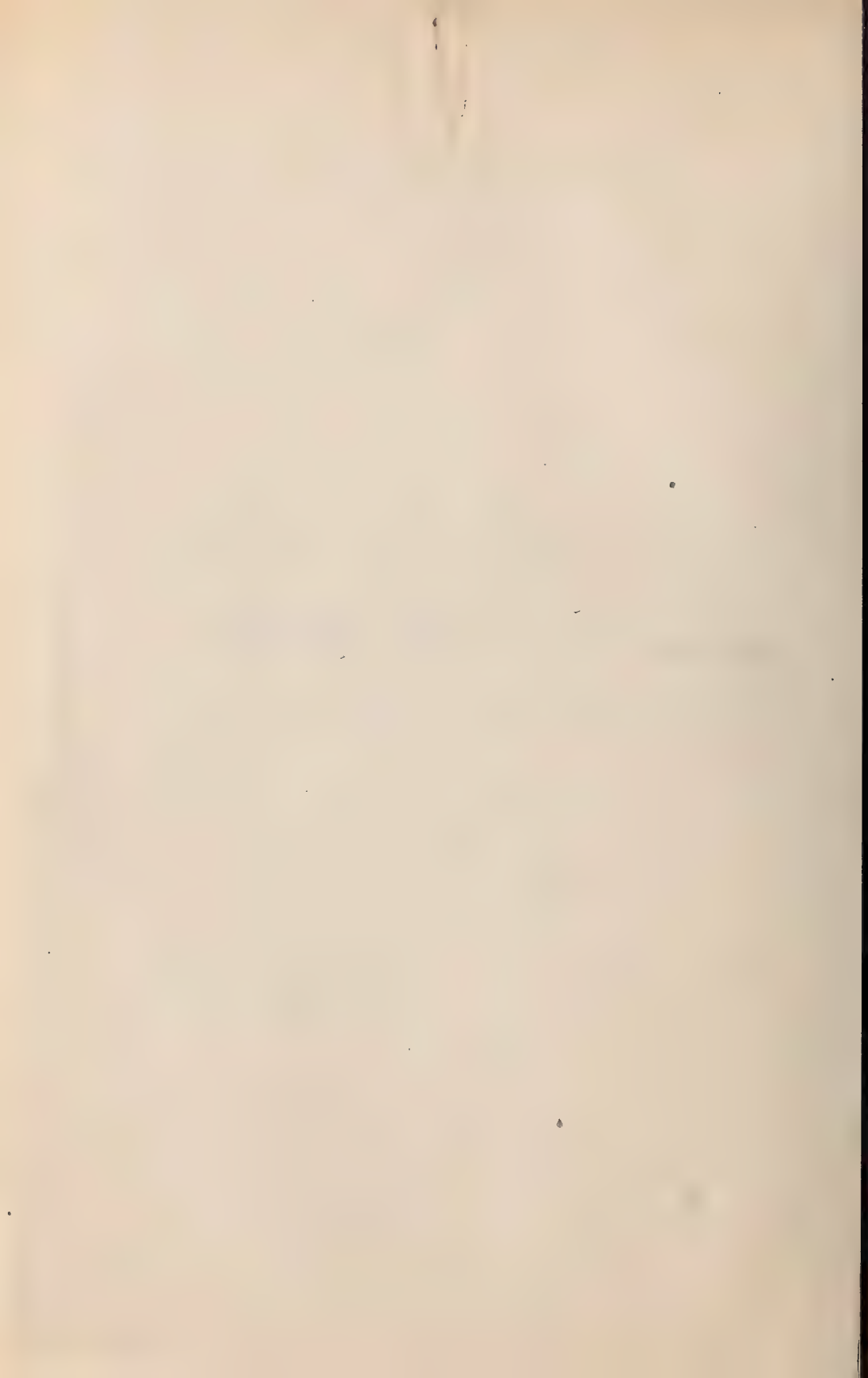
TYPE.—Adult male, Gunong Semanggol, North Perak, Malay Peninsula, collected on 22nd May, 1910, by E. Seimund.

Another specimen from Malacca secured by Dr. Maingay is in the Tweeddale collection in the British Museum, while two mounted specimens from unspecified localities in the Raffles Museum, Singapore, are probably referable to this form.

REMARKS.—According to Blanford ["Faun. Brit. Ind. Birds," iii, p. 287 (1895)], *Bubo coromandus* has not been recorded from further south than Aracan so that the present occurrence is a very considerable extension in range. I have been unable to examine adult Chinese specimens which may possibly prove identical with this and not the Indian race.



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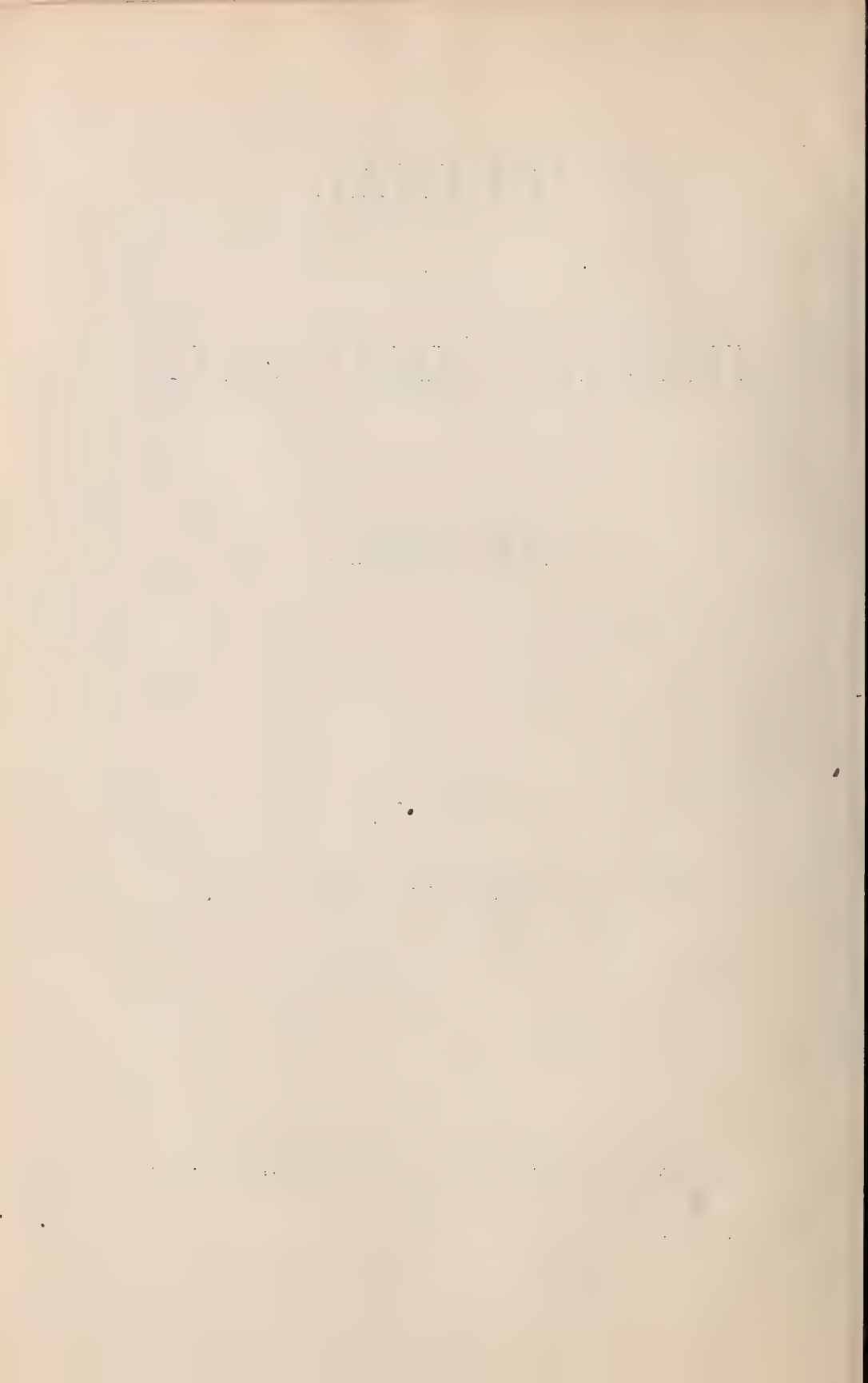
FEBRUARY, 1913, TO MARCH, 1915.

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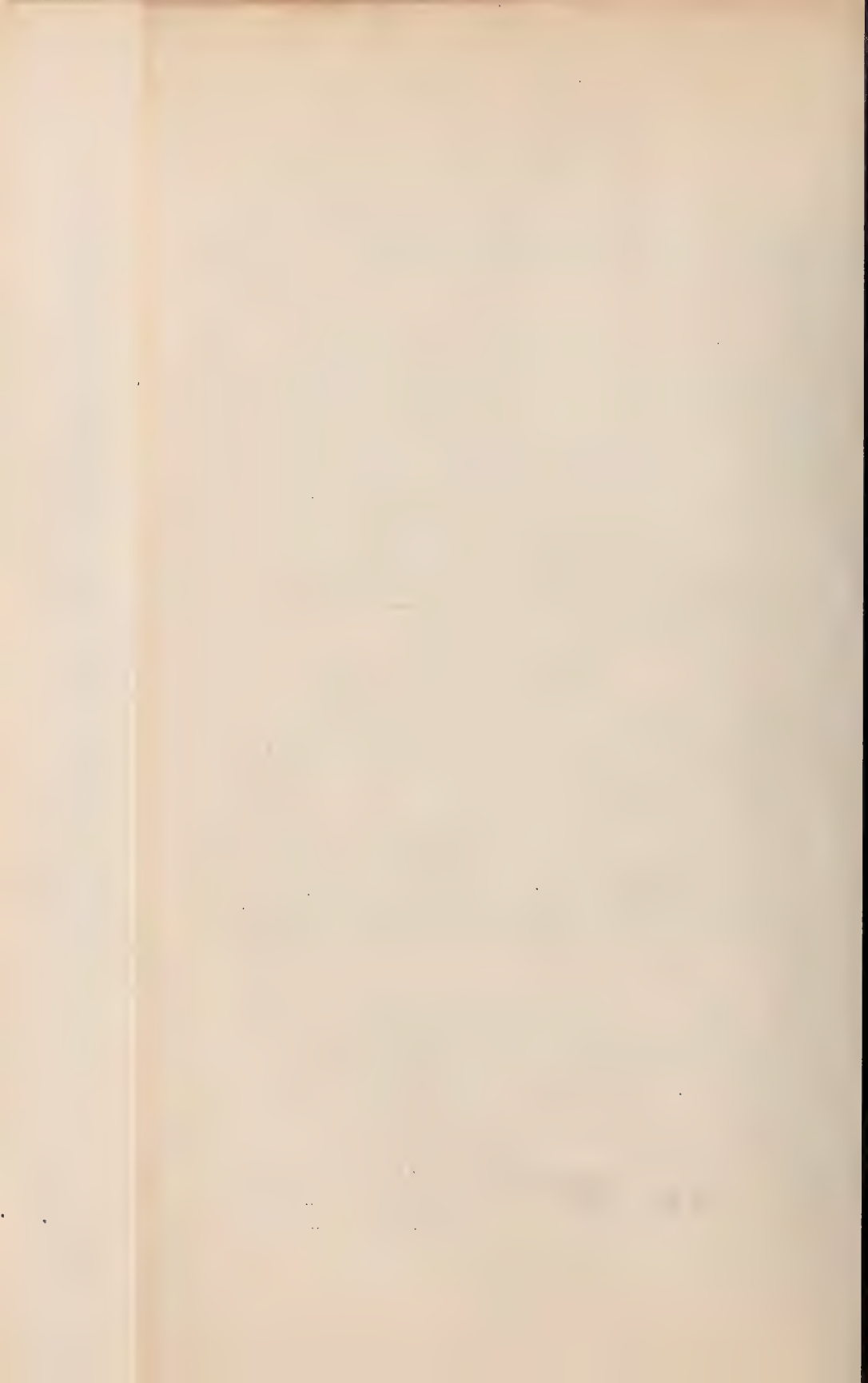
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NOTES ON BIRDS NEW TO, OR RARE IN, THE MALAY PENINSULA.

(THIRD SERIES.)

By H. C. ROBINSON, C.M.Z.S., M.B.O.U.

THE present notes continue those published in this journal, vol. IV, pp. 129-133 and pp. 229-233, and relate to species obtained in the ordinary course of collecting during the last eighteen months in the Federated Malay States and the adjacent portions of the Malay Peninsula.

CALOPERDIX OCULEA (TEMM.)

Caloperdix oculatea (Temm.); *Ogilvie Grant, Cat. Birds Brit. Mus.*, xxii., p. 222 (1893); *Robinson and Kloss, Ibis*, 1910, p. 671.

This handsome Jungle-Partridge, which is extremely rare in collections, was found to be by no means uncommon in swampy jungle at the foot of precipitous limestone hills near Pelarrit in Perlis, a small state in the north of the Peninsula, bordering on Kedah. Our collectors secured numerous specimens and also observed that it was kept in captivity by the local Malays who fed it on termites or white ants. Caged specimens, however, were said not to be long-lived.

A single male was also shot in February, 1912, at the height of 3,000 feet on Menang Gasing, a mountain in the main range of the Peninsula near the junction of the boundaries of the three states, Selangor, Negri Sembilan and Pahang.

As noted elsewhere, the locality "Malacca" for four specimens in the British Museum is open to grave suspicion, the skins having most probably been obtained by Malacca bird-hunters from some district in the north of the Peninsula.

Males differ from the females in the slightly larger size, most noticeable in the bill, and in the presence of a blunt tarsal spur or knob, which is sometimes reduplicated. Less adult specimens have the V-shaped black markings on the flanks encroaching on the centre of the breast.

ARBORICOLA CHARLTONI (EYTON).

Arboricola charltoni (Eyton); *Ogilvie Grant, Cat. Birds Brit. Mus.*, xxii., p. 221 (1893).

A single female specimen was obtained at Pelarrit, Perlis, in November, 1911. Throughout the Malay Peninsula this partridge is a very rare bird though common in the vicinity of Lenggong in Upper Perak, but in the first few months of 1912 it suddenly appeared in considerable numbers on the lower slopes of the Larut Hills, in the vicinity of Taiping, Perak. Large numbers were snared by the Malays and several are now in the gardens of the Zoological Society, London.

The locality "Penang" attributed to six specimens in the British Museum is certainly erroneous, the birds having probably been brought over alive to Dr. Cantor from Kedah or Perlis.

LOPHURA RUFa (RAFFLES).

Lophura rufa (Raffles); *Ogilvie Grant, Cat. Birds Brit. Mus.*, xxii., p. 286 (1893).

The Fire-back Pheasant, though not uncommon in certain localities, is not an easy bird to snare or shoot and the local museums are very deficient in specimens. Two males, adult and immature, were secured at Pelarit, Perlis, in November, 1911, by our Dyak collectors.

OSMOTRERON BICINCTA (JERD.).

Osmotreron bicincta (Jerd.); *Salvadori, Cat. Birds Brit. Mus.*, xxi., p. 57 (1893); *Robinson and Kloss, Ibis*, 1910, p. 674.

Out of several hundreds of the common *O. vernans* shot by Mr. Seimund during the 1910-12 seasons, three—two males and a female—shot on 30th November, 1910, and 1st February, 1912, proved to be of this species. Whether it comes south during the winter months or is resident throughout the year in the Malay Peninsula is not yet ascertained but all the specimens hitherto obtained have been shot between November and February.

OSMOTRERON VERNANS (LINN.) VAR.

Osmotreron vernans (Linn.); *Salvadori, Cat. Birds Brit. Mus.*, xxi., p. 60 (1893).

Among a large number of this species shot in Taiping during the last two years are two specimens—a male from Kamunting, obtained on 13th June, 1911, presented by Mr. Gray, and a female from Simpang, dated 1st February, 1912, shot by Mr. Seimund—which show a variation not uncommon among the members of this sub-family (*Treroninæ*) consisting of a defect of yellow pigment so that those portions of the plumage which are normally yellowish green become greyish green or pearly grey. The opposite variation in which there is an excess of yellow pigment so that the whole bird becomes more or less of a canary yellow colour is also not uncommon and specimens representing this phase have also been obtained near Taiping.

RALLINA FASCIATA (RAFFLES).

Rallina fasciata (Raffles); *Sharpe, Cat. Birds Brit. Mus.*, xxiii., p. 75 (1894).

Rails of these genus are by no means common in the Malay Peninsula though possibly more numerous in the northern districts. During a short stay at the end of October, 1911, at Alor Stah, the capital of Kedah, which is surrounded by large areas of alluvial rice lands, we found that this species was being hawked about the streets in large numbers at a rate equivalent to two for a penny. Slightly further north in Perlis it was also not uncommon in the rice

fields. The other species of the genus *Rallina superciliaris* (Eyton) is very much rarer and is represented by four or five specimens only in the Federated Malay States Museums.

DROMAS ARDEOLA, PAYKULL.

Dromas ardeola, Paykull; *Sharpe, Cat. Birds Brit. Mus.*, xxiv., p. 28 (1896).

The Crab Plover does not appear to have been recorded from further east than the Andaman Islands or on the eastern shores of the Bay of Bengal. On 24th September, 1912, Mr. Seimund shot three specimens, none of them quite adult, out of a flock of six met with on the mud-flats near Pulau Pintu Gedong, Klang Straits, Selangor.

HYDROCHELIDON LEUCOPTERA (MEISN. & SCHINZ).

Hydrochelidon leucoptera (Meisn. and Schinz); *Saunders, Cat. Birds Brit. Mus.*, xxv., p. 6 (1896).

The whiskered Tern was noted in considerable numbers in breeding plumage in Penang harbour in March, 1911, but specimens were not obtained. A large series of immature birds and birds in winter plumage were secured in the same place in October, 1911. The species seems to be not very common in Malayan waters.

STERNA ANÆSTHETA, SCOP.

Sterna anæstheta, Scop.; *Saunders, Cat. Birds Brit. Mus.*, xxv., p. 101 (1896); *Oates, Cat. Birds Eggs Brit. Mus.*, i., p. 190 (1901).

Two small rocks about 150 feet high, between the islands of Sri Buat and Tioman, off the coast of Pahang, on the eastern side of the Peninsula, are frequented by myriads of this tern. We visited these rocks, which are known as Tokong Burong, on 15th June, 1912, and secured a considerable number of eggs which were much incubated, though no young birds were seen. The rocks are almost precipitous with flat tops and are covered with a wiry grass growing in isolated tussocks. The eggs are laid singly underneath or by the side of these tussocks and take a good deal of finding.

Of the series of fifteen before me the ground colour varies from greenish white to pinky brown, and there is an equally wide range in the character of the mottling which varies from an almost evenly distributed speckling of dull pinkish brown to bold blotches of rich chocolate brown, either evenly distributed over the shell or congregated at the larger end. In all the specimens there are underlying markings of clouded pinky-buff which, as Oates remarks, are not very conspicuous.

One egg, which was unfortunately smashed in descending the rock, was almost pure white without any markings. There were many thousands of the terns around the rock all in full breeding plumage with the steamers well developed, and intermixed with them were a few *Sterna melanauchen*, of which, however, we did not find the eggs in this locality.

STERNA MELANAUCHEN, TEMM.

Sterna melanauchen, Temm.; *Saunders, Cat. Birds Brit. Mus.*, xxv., p. 126 (1896); *Oates, Cat. Birds Eggs Brit. Mus.*, i., p. 195, pl. xv., fig. 3 (1901).

The Black-naped Tern breeds sparingly on the rocks and cliffs of the islands of Sri Buat, Tioman, Pemanggil and Aor, off the coasts of Pahang and Johore, not, as a rule, at any great height above sea-level. The eggs are always single and are laid in slight depressions of the rock without any attempt at a nest or concealment. Twelve eggs, all obtained on Pulau Aor, vary less among themselves than is the case with those of *St. anæsthesia*, the differences being mainly in the size and tint of the larger olive brown blotches. An average egg measures 41 × 28 mm.

METOPIDIUS INDICUS (LATH.).

Metopidius indicus (Lath.); *Sharpe, Cat. Birds Brit. Mus.*, xxiv., p. 76 (1896); *Blanford, Faun. Brit. Ind. Birds*, iv., p. 219 (1898).

Blanford (*loc. cit.*) gives the range of the Bronze-winged Jacana as extending to the Malay Peninsula though I have been unable to find any authority for his statement and had therefore excluded it from my Hand-list of the Birds of the Malay Peninsula.

A single specimen was, however, shot among thick vegetation at the edge of a pond at Asam Kumbang, near Taiping, Perak, by the Chinese Taxidermist of the Perak Museum on 14th December, 1911, and a companion bird was seen. The species must therefore be added to the Peninsular list.

NETTION CRECCA (LINN.).

Nettion crecca (Linn.); *Salvadori, Cat. Birds Brit. Mus.*, xxvii., p. 243 (1895).

A female teal was shot in the vicinity of Kuala Lumpur, Selangor, in April, 1912, by Mr. J. Galloway, to whom the museum is indebted for many rare birds, and presented by him to the Selangor Museum. I had overlooked the occurrence of this bird in the Peninsula but a female collected by Dr. Maingay in the territory of Malacca is in the British Museum collection.

I do not know of any other instance of its occurrence within our limits.

NETTION FORMOSUM (GEORGI).

Nettion formosum (Georgi); *Salvadori, Cat. Birds Brit. Mus.*, xxvii., p. 240 (1895).

My Malay assistant on a visit to his home on the Bruas river in the Dindings territory, north of the mouth of the Perak river, bought from a local Malay two pairs of the Baikal Teal. The original owner stated that he had caught them as ducklings in the river with a casting net (*jala*) but it is probable that they were the offspring of a domesticated pair.

UPUPA INDICA, REICHENB.

Upupa indica, Reichenb; *Salvin, Cat. Birds Brit. Mus.*, xvi., p. 10 (1892).

Mr. Seimund shot a female at Kamunting, near Taiping, Perak, on 5th November, 1911, which is the most southerly record for the species and the only record for the Federated Malay States. In the same month our collectors found it common at Padang Sireh, on the Perlis-Senggora border.

BATRACHOSTOMUS AFFINIS, BLYTH.

Batrachostomus affinis, Blyth; *Hartert, Cat. Birds Brit. Mus.*, xvi., p. 643 (1892).

Though skins of the three local species of Frogmouths appear to have occurred fairly frequently in the old Malacca collections, the more recent collectors do not seem to come across them often, and I have not myself examined more than ten or twelve specimens in the flesh or in recent skins.

Our collectors obtained a single female of this species at Parit, on the Perak river, on 14th September, 1911. It was with the succeeding species shot at dusk on the edge of a patch of swampy jungle.

BATRACHOSTOMUS STELLATUS (GOULD).

Batrachostomus stellatus (Gould); *Hartert, Cat. Birds Brit. Mus.*, xvi., p. 639 (1892).

A single female was shot in the same locality as the preceding on 17th September, 1911.

CHÆTURA INDICA, HUME.

Chætura indica, Hume; *Hartert, Cat. Birds Brit. Mus.*, xvi., p. 475 (1892).

A male of this form was shot by Mr. J. M. Gray at Simpang, near Taiping, Perak, on 17th December, 1911. Another was shot by Mr. C. Burn-Murdoch at Kajang, Selangor, on 26th November, 1912, in mistake for a snipe. The few specimens of this species on record from the Peninsula have all been obtained in the winter months while *Ch. gigantea* is resident throughout the year.

INDICATOR ARCHIPELAGICUS, TEMM.

Indicator archipelagicus, Temm; *Shelley, Cat. Birds Brit. Mus.*, xix., p. 4 (1891); *Robinson and Kloss, Ibis*, 1911, p. 44.

Owing to a very dry season and the consequent profuse flowering of the *nerum* trees (*Dipterocarpus crinitus*) the Tahan river and the lower slopes of the mountain were in July, 1911, invested with incredible multitudes of bees which made life a burden during the daytime. Perhaps as a corollary we secured two specimens of the Malayan Honey Guide, both males, with the yellow shoulder spot well developed. In the previous eight years' collecting we have only obtained two other specimens.

LYNGIPICUS CANICAPILLUS, BLYTH.

Lyngipicus canicapillus, Blyth; *Hargitt, Cat. Birds Brit. Mus.*, xviii., p. 322 (1890); *Robinson and Kloss, Ibis*, 1911, p., 46.

Of three birds, two males and a female, collected in November, 1911, at Padang Sireh, on the Perlis-Senggora border, one male has the central rectrices quite unspotted and is rather smaller than the other male from the same locality, the wing measuring 77 mm. against 82 mm. The wing of an adult male from Kuala Lumpur is also 82 mm., and in this specimen also the central rectrices are only very slightly spotted. In view, however, of the fact that both races occur in the same area I do not think that *I. pumilus*, Hargitt, which was founded on these differences, can be recognised as even sub-specifically distinct.

CHALCOCOCCYX MALAYANUS (RAFFLES).

Chalcococcyx malayanus (Raffles); *Shelley, Cat. Birds Brit. Mus.*, xix., p. 298 (1890).

In the central and northern portions of the Peninsula this cuckoo is a very rare bird. Two males and a female, collected by Mr. Seimund at Lenggong in Upper Perak in January, 1912, appear to be the most northerly specimens on record.

PITTA CÆRULEA (RAFFLES).

Pitta cærulea (Raffles); *Sclater, Cat. Birds Brit. Mus.*, xiv., p. 416 (1888.); *Robinson and Kloss, Ibis*, 1911, p. 48.

A half-grown nestling obtained at Pelarit, Perlis, early in November indicate that this species breeds in the later portion of the year.

PITTA COCCINEA, EYTON.

Pitta coccinea, Eyton; *Sclater, Cat. Birds Brit. Mus.*, xiv., p. 431 (1888).

Until recently this very handsome species of Ground Thrush was but poorly represented in the Federated Malay States Museums. Recently, however, we have found that it is resident throughout the year in low country swampy jungle, which is very unpleasant to collect in; and series have been obtained from Ayer Kring on the Negri Sembilan-Pahang boundary, at Rawang in Selangor, and at Parit in the lower portion of the Perak river valley.

CYORNIS RUFIGASTRA (RAFFLES).

Muscicapa rufigastrea, Raffles, *Trans. Linn. Soc.*, xiii., p. 312 (1822).

Cyornis frenata, Hume, *Stray Feathers*, viii., p. 114 (1880).

Cyornis erythrogaster, Sharpe, *Hand-List Birds*, iii., p. 216 (1901).

Mr. Seimund collected a series of five specimens of this flycatcher on Pulau Pintu Gedong, Selangor, in September and October, 1912, two males and three females. The latter agree exactly with the description of *C. frenata* of which they are practically topotypes and with another female collected at Tanjong Tombak, Pulau Bintang,

south of Singapore, which was shot in company with a male agreeing in characters with *C. rufigastra*. The two males from Selangor have slightly paler undersurfaces than the latter but the difference is only trivial. There is not the slightest doubt therefore that *C. rufigastra* and *C. frenata* are male and female of the same species and those purists who reject Raffles' name as a *vox hybrida* must adopt *C. frenata* in preference to Sharpe's emendation, *C. erythrogaster*.

This species, again, is strictly confined to the mangrove zone which accounts for its comparative rarity in collections.

CYORNIS ELEGANS (TEMME).

Siphia elegans (Temm.); Sharpe, *Cat. Birds Brit. Mus.*, iv., p. 441 (1879).

Cyornis elegans, Hartert, *Nov. Zool.* ix., p. 550 (1902) (*Pahang lowlands*).

This handsome flycatcher is extremely rare in the Malay Peninsula and the only specimen we possess is one from Padang Tuan, Segamat, North Johore, obtained by one of our Dyak collectors on 19th February, 1911.

EUPTILOSUS EUPTILOSUS (J. & S.).

Pinarocichla euptilosa (J. & S.); Gadow, *Cat. Birds Brit. Mus.*, vi., p. 62 (1881); Oates, *Faun. Brit. Ind. Birds*, iii., p. 279 (1889).

The Crested Brown Bulbul is by no means a common bird in the Malay Peninsula and is rarely found in large numbers. The Federated Malay States Museums have specimens from Selama and Parit in Perak, Tanjong Malim, Rawang and Cheras in Selangor, and from the territory of Malacca. The species seems to be mainly an inhabitant of low country jungle and is not found on the hills. The only place where it has been found at all abundantly is Rawang, where numbers were attracted by the fruiting of a species of fig tree in July, 1912.

PYCNONOTUS ROBINSONI. GRANT.

Pycnonotus robinsoni, Grant; Kloss, *Journ. Fed. Malay States Mus.*, iv., p. 238 (1911).

Three more specimens of this Bulbul were obtained at Padang Sireh, Perlis-Senggora border, in November. They agree well with the specimen mentioned by Mr. Kloss and render it more than doubtful if *P. robinsoni* can be maintained even as a sub-species distinct from *P. blanfordi*.

KENOPIA STRIATA (BLYTH).

Kenopia striata (Blyth); Kloss, *tom. cit.*, p. 232.

Two more specimens, both males, were obtained at Rawang, Selangor, in July. The species has not hitherto been recorded from the State.

CALORNIS CHALYBEA (HORSF.).

Calornis chalybea (Horsf.); *Sharpe, Cat. Birds Brit. Mus.*, xiii., p. 543 (1896).

Specimens from the outlying island of Pulau Aor, in the South China Sea, seem at first sight to be separable by their coarser more robust bills, though the other dimensions do not differ appreciably. In colour the island birds are not distinguishable from those found on the mainland. Salvadori has separated the bird from Nias under the name *C. altirostris*, mainly on account of the larger bill and darker colouration, both characters that seem very frequently developed in island races of widely distributed birds.

CHALCOSTETHA PECTORALIS (TEMM.).

Chalcostetha insignis (Temm.); *Gadow, Cat. Birds Brit. Mus.*, ix., p. 12 (1884).

The Purple-breasted Sun-bird was but poorly represented in our collection by three skins from Penang. In June, 1912, however, we obtained a series from the island of Sri Buat, off the Pahang Coast, on the east side of the Peninsula. Like the majority of the local Sun-birds (excluding the Spider hunters) this species only occurs in the littoral belt and is rarely, if ever, found far inland. Formerly, according to Mr. C. B. Kloss, it was common at Tanjong Katong, in Singapore Island, but is seldom seen there now. Mr. Seimund found it common at Pulau Pintu Gedong, Klang Straits, Selangor, in September and October, 1912. It is, therefore, probably largely confined to mangroves.

PIPRISOMA EVERETTI (SHARPE).

Prionochilus everetti, *Sharpe, Ibis*, 1877, p. 16; *id. P.Z.S.* 1879, p. 343, pl. xxx, fig. 1; *Id. Cat. Birds Brit. Mus.*, x., p. 76 (1885).

I have referred to this species with some hesitation a single male specimen obtained at Rawang, Selangor, in July, 1912. It differs from the type description and the figure as cited above in being a much darker tint above, greyish not brown, and in having the sides darker grey, not nearly uniform with the middle of the belly as shown in the figure. The habitat of *P. everetti* is given as Western Borneo and the island of Labuan but in the absence of a series and direct comparison with the type the differences are not sufficient to justify me in describing the bird before me as a new species.

The present specimen was shot while feeding on a mistletoe on the boughs of a lofty tree in swampy jungle.

PARUS CINEREUS, VIEILL.

Parus cinereus; *Gadow, Cat. Birds Brit. Mus.*, viii., p. 16 (1883).

Parus atriceps, *Ogilvie Grant, Fascic. Malay Zool.*, iii., p. 77 (1905).

This tit has not hitherto been recorded from the southern part of the Malay Peninsula though it was met with by myself on the coast of Patani, and by Dr. Abbot on the coast of Trang, about 150 miles north of Penang. In September and November, 1912, Mr. Seimund, however, found it abundant among the mangroves on Pulau Pintu Gedong, at the entrance to Klang Straits, Selangor coast, together with *Zosterops aureiventris*.

ON A FURTHER COLLECTION OF MAMMALS AND BIRDS FROM THE HILLS OF NEGRI SEMBILAN.

By H. C. ROBINSON, C.M.Z.S., M.B.O.U., AND C. BODEN KLOSS, F.Z.S., M.B.O.U.

IN a recent number of this Journal one of us has given a list of a collection of mammals and birds obtained on the Telapa Buroh range in Negri Sembilan, which showed that the Himalaiaic element, which is the dominant feature of the fauna of the higher hills of Pahang, Perak and Selangor, does not extend so far south as Negri Sembilan, and this is confirmed by the present series. In September, 1913, the Dyak collectors of the Museum were sent to collect on Gunong Tampin, in the extreme south of the State, which attains a height of 2,507 feet and may be regarded as the southern termination of the Peninsular main range, hills of greater elevation in Malacca and Johore being quite isolated by wide tracts of low-lying country.

The collection, though not very extensive, contains several species of considerable interest, and we have therefore thought it worth while to give a list in full as it altogether includes six mammals and 25 birds not recorded in the two previous papers.*

The party were camped at about 1,000 feet in heavy jungle, and collections were made from that elevation to the summit.

MAMMALS.

1. SYMPHALANGUS SYNDACTYLUS CONTINENTIS, THOMAS.

Hylobates syndactylus (Desm.); Flower, P.Z.S., 1900, p. 313; Robinson, Journ. Fed. Malay States Mus., i, p. 26 (1905).

A pair of large adults.

The Siamang is rather rare in the south of the Peninsula and is not usually found at low elevations.

2. HYLOBATES LAR (LINN.).

A large female in the black pelage.

3. RATUFA AFFINIS AUREIVENTER (GEOFFR.).

♂, 2 ♀.

Rather variable, one female having the hands and feet dark chocolate brown.

4. RATUFA MELANOPEPLA, MILLER.

2 ♂, ♀.

Apparently as common as the preceding on this hill.

* Robinson, Journ. F.M.S. Museums, i, p. 25, 1905-6.

Kloss, op. cit., iv, p. 219, 1909-11.

5. *SCIURUS VITTATUS MINIATUS*, MILLER.

♀.

Apparently rare.

6. *SCIURUS NIGROVITTATUS JOHORENSIS*, ROB. & WROUGHT.

Journ. Fed. Malay States Mus., iv, p. 166 (1911).

2 ♂, ♀.

Agreeing well with the types.

7. *SCIURUS TENUIS TENUIS*, HORSP.

5 ♂, 3 ♀.

Common.

8. *SCIURUS ROBINSONI ALACRIS*, THOMAS.

♂.

The southernmost recorded locality for this ground squirrel.

9. *PETAURISTA NITIDA MELANOTUS*, GRAY.

♂.

10. *LARISCUS INSIGNIS JALORENSIS*, BONHOTE.

3 ♂, ♀.

Belonging to the duller northern form and not to the brighter sub-species, *L. i. meridionalis*, from Southern Johore and Singapore Island.

11. *RHINOSCIURUS LATICAUDATUS TUPAIODES*, BLTH.

♂.

Tail hoary, each hair with the tip pure white, basal portion buff.

12. *EPIMYS VOCIFERANS* (MILLER).

♀.

13. *EPIMYS PELLAX* (MILLER).

2 ♂, ♀.

It is curious that in this range of hills *E. pellax* seems to have supplanted entirely *E. surifer* which is elsewhere by far the commoner rat.

14. *EPIMYS ASPER* (MILLER).

♀. Immature specimen not sexed.

Tails rather short but the specimens are in indifferent condition.

15. *EPIMYS RATTUS JALORENSIS* (BONHOTE).

2 ♀.

16. *TUPAIA FERRUGINEA FERRUGINEA*, RAFFLES.

2 ♂, 4 ♀.

17. *TUPAIA MALACCANA*, ANDERSON.

♂, ♀.

Much commoner in the south than in the north of the Peninsula and never yet met with on any of the adjacent islands.

18. *URSUS MALAYANUS*, RAFFLES.

A large female was shot as it was descending a tree after robbing a bee's nest.

BIRDS.

1. PTILINOPUS JAMBU (GM.).

6 ♂, 2 ♀.

This beautiful fruit pigeon elsewhere rather rare and decidedly local was common on the hill, feeding on fig trees.

2. CHALCOPHAPS INDICA (LINN.).

♂.

3. HUHUA ORIENTALIS (HORSF.).

♀.

Nowhere abundant, or at least, hard to get.

4. PHOTODILUS BADIUS (HORSF.).

♀.

5. CARCINEUTES PULCHELLUS (HORSF.).

2 ♂, 2 ♀.

6. NYCTIORNIS AMICTA (TEMM.).

1 ♂, 2 ♀.

7. HIEROCOCCYX NISICOLOR (HODGS.).

♂.

8. ZANCLOSTOMUS JAVANICUS (HORSF.).

♂.

9. UROCOCCYX ERYTHROGNATHUS (HARTL.).

2 ♂.

10. RHINORTHA CHLOROPHÆA (RAFFLES).

♂.

11. PYROTROGON NEGLECTUS, FORBES & ROBINSON.

♂, ♀.

12. PYROTROGON KASUMBA (RAFFLES).

♂.

This specimen has a narrow bar of scarlet on the rump above the upper tail coverts. The same abnormality has been noted in an adult male from Malacca (Ogilvie Grant, *Cat. Birds Brit. Mus.*, xvii., p. 484), but is apparently not constant.

13. CALORHAMPHUS HAYI (J. E. GREY).

♂, ♀.

14. CHOTORHEA CHRYSOPOGON (TEMM.).

♂, 2 ♀.

15. CHOTORHEA MYSTACOPHANES (TEMM.).

♂, 3 ♀.

16. CYANOPS HENRICI (TEMM.).

♂, 2 ♀.

17. PYRRHOPICUS PORPHYROMELAS (BOIE.).

♀.

18. MIGLYPTES GRAMMITHORAX (MALH.).

♂, 2 ♀.

19. MIGLYPTES TUKKI (LESS).

♂

20. CHRYSOPHLEGMA HUMII. HARGITT.

♀

21. CALYPTOMENA VIRIDIS. RAFFLES.

2 ♂, 2 ♀.

22. EURYLEMUS OCHROMELAS, RAFFLES.

♂, 4 ♀.

23. CYORNIS CONCRETA (S. MULL).

Robinson, Journ. Fed. Malay States Mus., ii, p. 187 (1909).

♂.

This Flycatcher is normally an inhabitant of the high hills above 3,000 feet and has not hitherto been found south of Ginting Bidei in Selangor. It has also been shot on Gunong Tahan, between 500-1,000 feet, so that it is evidently not absolutely confined to the mountains.

24. HYPOTHYMIS AZUREA (BODD.).

Hypothymis azurea prophata, Oberholser, Proc. U.S. Nat. Mus., 39, p. 597 (1911).

♂, ♀.

25. RHIPIDURA PERLATA. S. MULL.

♂.

26. TERPSIPHONE INCII, GOULD.

♂, ♀.

Rare in Malayan collections though not improbably commoner than it appears. Probably a seasonal visitor from China and Japan.

27. TERPSIPHONE AFFINIS (BLYTH).

♀.

28. PHILENTOMA VELATUM (TEMM.).

2 ♀.

29. PHILENTOMA PYRRHOPTERUM (TEMM.).

♂, 2 ♀.

30. CULICICAPA CEYLONENSIS (SWAINS).

2 ♂, ♀.

31. STOPAROLA THALASSINOIDES (CAB.).

♀.

By no means common in the south of the Peninsula.

32. PERICROCOTUS IGNEUS, BLYTH.

♂.

33. CHLOROPSIS ZOSTEROPS (VIG.).

♂.

34. CHLOROPSIS ICTEROCEPHALA (LESS).

3 ♂, ♀.

35. CHLOROPSIS CYANOPOGON (TEMM.).

2 ♂.

36. *HEMIXUS CINEREUS* (BLYTH).
 ♂.
 37. *HEMIXUS MALACCENSIS* (BLYTH).
 ± ♂, ♀.
 38. *MICROTARSUS MELANOCEPHALUS* (GM.).
 2 ♀.
 39. *MICROTARSUS MELANOLEUCUS* (EYTON).
 ♂, 2 ♀.
 40. *CRINIGER TEPHROGENYS*, JARD. AND SELBY.
 ♂, ♀.
 41. *ALOPHOIXUS PHÆOCEPHALUS* (HARTL.).
 ♂.
 42. *PYCNONOTUS SIMPLEX* (LESS).
 ♀.
 43. *PYCNONOTUS SALVADORII*, SHARPE.
 ♀.
 44. *EUPETES MACROCERCUS* (TEMM.).
 ♂.
 45. *POMATORHINUS BORNEENSIS*, CAB.
 ♂, 2 ♀.
 46. *TURDINUS SEPIARIUS* (HORSF.).

Robinson, Journ. Fed. Malay States Mus., ii, p. 198 (1909).

♀.

A submontane bird living in deeper jungle and at slightly higher elevation than the very closely allied *T. abbotti*, which is often found in secondary forest and orchard land.

47. *TURDINUS MAGNIROSTRIS* (BLYTH).
 4 ♂, 2 ♀.
 48. *DRYMOCATAPHUS NIGROCAPITATUS* (EYTON).
 ♀.
 49. *ANUROPSIS MALACCENSIS*, HARTL.
 3 ♀.
 50. *CORYTHOCICHLA STRIATA LEUCOSTICTA*, SHARPE.
 ♂

The occurrence of a single male of this species on Gunong Tampin is rather surprising as throughout the Federated Malay States it is strictly confined to the higher mountains.

Incidentally it may be noted that the form is very doubtfully distinct from *C. brevicaudatus* (Blyth), *Journ. Asiat. Soc., Bengal*, xxiv, p. 272 (1855), from "the mountainous interior of the Tenasserim Province" with which it agrees in having the sides of the head ashy grey, not rufescent, and the spots on the tips of the wing coverts white, not fulvous.

Dr. Sharpe, in diagnosing the species, has given these characters as separating it from *C. striata*, but has omitted to compare it with *C. brevicaudata*, of which, at the time, there appeared to be no specimens in the British Museum, and all subsequent authors have followed his lead.

51. *TURDINULUS GRANTI*, RICHMOND.

Turdinulus humii, Robinson, Journ. Fed. Malay States Mus., i, p. 26 (1905).

♂. 4 ♀.

Commoner on the Negri Sembilan hills than anywhere else in the Peninsula.

52. *ALCIPPE CINEREA*, BLYTH.

♂.

53. *STACHYRIS DAVISONI*, SHARPE.

3 ♂, 3 ♀.

54. *STACHYRIS POLIOCEPHALA* (TEMML.).

♂, ♀.

55. *STACHYRIS LEUCOTIS* (STRICKL.).

2 ♂, 5 ♀.

Common in Negri Sembilan but much rarer to the north.

56. *STACHYRIS MACULATA* (TEMML.).

2 ♂.

57. *CYANODERMA ERYTHROPTERUM* (BLYTH).

2 ♂, ♀.

58. *HERPORNIS ZANTHOLEUCA* HODGS.

♂, ♀.

59. *GEOCICHLA INTERPRES*, (TEMML.).

Geocichla avensis, Hume, Stray, Feath., viii, p. 39 (79); Oates. Faun. Brit. Ind., *Birds*, ii, p. 138 (1890).

♀ Imm.

In 1878 one of Hume's collectors obtained an immature thrush from the hills of Rembau, which was identified with the species described by Grey from a native drawing from a specimen procured in Upper Burma, while Dr. Abbott also collected specimens identified as *G. interpres* by Richmond on the hills of Trang, Western Siamese States, in 1896; no other examples have been recorded from the Malay Peninsula. Hume relied on the absence of a white wing bar in his specimen to separate it from *G. interpres*, but Oates, *loc. cit.*, states that the specimen is in moult and that the sprouting feathers appear to possess this feature which is fully developed in our specimen from Tampin. Our collectors confused the bird with immature *Hyrdocichla ruficapilla* which affects similar situations and which they have been told not to collect in numbers, and this perhaps accounts for its not having been obtained before. Possibly also, as is the case with the other species of *Geocichla* in the Peninsula, the species is migratory.

There is, we think, little doubt that the nominal species, *G. avensis*, has no existence in fact.

60. HYDROCICHLA FRONTALIS (BLYTH).

♂.

Very much rarer than the next species.

61. HYDROCICHLA RUFICAPILLA (TEMME),

♀.

62. CITTOCINCLA MACRURA (GM.).

♀.

63. ACANTHOPNEUSTE BOREALIS (BLAS.).

♀.

64. LANIUS TIGRINUS, DRAP.

2 ♂, 4 ♀.

65. DENDROPHILA SATURATION. HARTERT.

♂, ♀.

Exceptionally deep in tone.

66. DICRURUS ANNECTENS, HODGS.

♀.

67. ORIOLUS ZANTHONOTUS, HORSE.

♀.

68. AETHOPYGA TEMMINCKI (HORSE.).

4 ♂.

Common in the Negri Sembilan hills, replacing *Ae. siparaja* of the sea coast.

69. ANTHOTHREPTES HYPOGRAMMICA (S. MULL.).

2 ♂, 2 ♀.

70. ARACHNOTHERA LONGIROSTRIS (LATH.).

♂, ♀.

71. PRIONOCHILUS IGNICAPILLUS, EYTON.

♂.

72. PRIONOCHILUS MACULATUS, TEMME.

♂, 2 ♀.



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A VERTEBRATE FAUNA OF THE MALAY PENINSULA

FROM THE

ISTHMUS OF KRA TO SINGAPORE
INCLUDING THE ADJACENT ISLANDS.

PUBLISHED UNDER THE AUTHORITY OF THE GOVERNMENT
OF THE FEDERATED MALAY STATES.

EDITED BY H. C. ROBINSON., C.M.Z.S.,
DIRECTOR OF MUSEUMS, FEDERATED MALAY STATES.

REPTILIA AND BATRACHIA

BY

GEORGE A. BOULENGER, D.S.C., PH.D., F.R.S.

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ON A COLLECTION OF BIRDS FROM THE SIAMESE PROVINCE OF BANDON, N.E. MALAY PENINSULA.

By H. C. ROBINSON, C.M.Z.S., M.B.O.U.

THE province of Bandon, with which the present paper is concerned, is situated on the eastern side of the Malay Peninsula, between long. $98^{\circ} 30'$ and $99^{\circ} 40'$ E., and lat. $9^{\circ} 10'$ and $8^{\circ} 30'$ N. It is bounded on the south and east by the province of Nakon Sitamarat, on the west by Takopah and on the north by Chaiya. As yet it is comparatively little developed though the Siamese Bangkok-Singapore Railway, which traverses its eastern districts, will do much to remedy this. At present its principal production is timber, of which large quantities are cut in the forests to the west of the province, floated down the Bandon river, which is one of the most navigable in the Malay Peninsula, and dealt with by a large and well equipped saw mill at Bandon town, the cut timber being mainly utilized at Bangkok but exported also to Kelantan, Trengganu and Singapore and even to Europe. A little tin is also produced and a small amount of wolfram from a mine on the coast, but the mineral output is as yet insignificant.

The population is exclusively Siamese or at least Siamese speaking, though on the coast there is a slight admixture of Malay blood which is more pronounced on the coast of Chaiya, to the north among the fishing population.

The coast, except on the south-east where it is rocky with a sandy beach, is low and mangrove grown, succeeded towards the interior by a belt of sandy barren land overgrown in places by *Melastoma* scrub and in others by stretches of *gelam* (*Melaleuca leucodendron*).

At the base of the hills stretches a large area of very fertile land occupied by villages and rice fields but the province, as a whole, is stated to be sparsely inhabited as compared with its southern neighbour Nakon Sitamarat. Roads are as yet in a backward condition, but their lack is in large part supplied by the Bandon river, which except in the dry season is navigable for steam launches for nearly a hundred miles from its mouth, which unfortunately is blocked by a very broad and very shallow bar, not carrying more than six or seven feet of water at any tide.

The only considerable town is Bandon, about three or four miles from the mouth of the river, a thriving little place of apparently about six or seven thousand inhabitants with a large number of Siamese and Chinese shops, a detachment of the provincial *gendarmerie* and a considerable number of officials.

The birds collected in the province of Bandon, with the exception of perhaps half a dozen specimens obtained *en route*, were all secured in three localities regarding which it may perhaps be of interest to give some particulars.

1. BAN KOK K LAP.

A large hamlet in the amphur of Lampum on the banks of the river of that name, which is a fair sized tributary of the Bandon river, the village is about four miles to the west of the main line of the Bangkok-Singapore Railway, which has a station at Lampum and on which ballast trains were already running at the time of our visit.

The village is situated at the foot of the range of hills running about N.W. to S.E., which in their northern part separate the province of Bandon from that of Nakon Sitamarat, attaining a maximum elevation of slightly over 4,200 feet in Kao Nawng.

The population in the neighbourhood of Ban Kok Klap was considerable; there was much cultivated land, orchards in which betel palms, mango, langsat and coconut palms were the principal fruit trees, large tracts of rice and patches of Indian corn and hill padi. Much destruction of jungle has taken place for these last two products, the abandoned land growing up in bamboo and secondary growth amongst which a species of stinging shrub was very common.

To the north and east of the village were several limestone hills, of the type usual in the Malay Peninsula, all of them much fissured and shattered, though no caves of any considerable extent seem to occur in them.

The fauna was not of any special interest being very similar to that found in Trang on the other side of the main range.

In the rice fields, wood-duck, tree-teal and wattled plovers were very common and an occasional pea-fowl was met with, though these are much more abundant when the padi is in ear, the rice fields being in stubble at the time of our visit.

In the orchard lands hill-mynas (*Eulabes*), glossy starlings (*Calornis*), pied hornbills (*Anthracoceros*) and several species of wood-pecker were the most noticeable birds, while in the bamboo thickets jungle partidges (*Caloperdix* and *Tropicoperdix*) were very abundant but were almost impossible to obtain owing to a long continued drought having so dried up the dead leaves underfoot that, even for a Dyak, a noiseless approach was out of the question.

We collected at Ban Kok Klap from 29th June to 6th July, 1913.

2. KAO NAWNG (lower camp).

This was situated on the upper reaches of the river flowing past Ban Kok Klap, probably about fifteen miles distant from that place at a height above sea-level of about 1,200 feet and quite close to the divide leading down to Nakon Sitamarat.

Owing partly to an actual scarcity of elephants and partly to the reluctance of the owners to use them for transport purposes on the plea that this damages their efficiency for timber hauling, which is their principal use, we had to rely in the main on coolies.

Though quite willing, the local Siamese were extraordinarily inefficient as jungle carriers, and all loads other than those of the most trifling weight had to be carried slung on a pole between two men.

After about the first five miles, when the primary jungle was entered, there was practically no path, the track taken being along the banks of the river itself, which in places was deep and rapid and had to be crossed between thirty and forty times. Under these circumstances progress was slow, and though our impedimenta were reduced to a minimum and there was no lack of coolies we did not arrive at our destination until the afternoon of the second day, though, as stated above, the total distance traversed could not have been more than fifteen miles. Owing to the rocky and broken nature of the country there was some difficulty in finding a suitable site for a camp, which was enhanced by the fact that there were no suitable palm leaves for roofing purposes, banana leaves, which are very perishable and unsatisfactory, having to be used.

During our stay on the mountain, which lasted from 11th June to 28th June, the weather was very unfavourable. There was always a strong wind, and rain, though at no time heavy, was almost continuous after about 10 a.m. Birds and animals were by no means numerous.

3. KAO NAWNG (upper camp).

During our stay on the mountain a party was detached for work at higher elevations and a camp was established at about 3,500 feet, a few hundred feet below the extreme summit of the range, in a saddle between two peaks. The weather was extremely wet and windy, the collecting ground very limited in extent, owing to the steepness of the mountain, and covered with very dense and matted vegetation, and the results were therefore not large, though several very interesting species both of birds and mammals were obtained.

The principal object in collecting on these hills which have never previously been visited by a naturalist was to ascertain what relationship their fauna bore to that of the main peninsular range to south and to that of the Tenasserim mountain Nwalabo and Muleyit to the north.

As might be expected, the present collections show that the fauna is almost exactly intermediate, so much so that in many cases it is difficult to state whether a specimen should be assigned to the Tenasserim or the Malayan race, when these have been separated. The area of these hills above the 3,000 feet and 4,000 feet contours is

however so small that the mountain fauna is correspondingly limited and it is therefore not safe to draw any deductions from the absence or presence of particular species.

Many forms strictly confined to the zone above 3,000 feet in the south of the Malay Peninsula here occur at elevation of 1,000 feet or under while certain species such as *Cyanops oorti* and *Oriolus consanguineus* of insular facies, common everywhere in the hills of Selangor and Perak, are not met with on Kao Nawng and presumably do not occur.

The following species not hitherto recorded from the Malay Peninsula were collected:

Pseudotantalus leucocephalus (Penn.);

Cyanops davisoni (Hume);

Anthipes submoniliger, Hume;

Anthipes olivacea (Hume);

Cryptolopha youngi, sp. nov.;

Thringorhina guttata (Tick.);

Pnoepyga pusilla, Hodgs.;

Æthopyga sanguinipectus, Wald.

Without the active co-operation of the local authorities jungle travel in the Siamese portions of the Malay Peninsula is practically impossible to a stranger. Our most hearty thanks are therefore due, in the first place to H.R.H. Prince Damrong, Minister of the Interior, Siam, who provided us with the necessary introductions, and in the second to the Acting Governor of Bandon and to the amphurr* of Lampum, who treated us most courteously and took an infinity of trouble in securing the large amount of transport that we required. Without their aid we should have been tied to the line of the railway and would have obtained no results of any particular interest.

PHASIANIDÆ.

1. ARBORICOLA CHARLTONI.

Arboricola charltoni (Eyton); Ogilvie Grant, Cat. Birds Brit. Mus., xxii., p. 221 (1893); Robinson, Journ. Fed. Malay States Mus., v., p. 15 (1913).

These jungle partridges are apparently fairly common in the north of the Peninsula, though they are extremely rare south of the latitude of Taiping in central Perak. Near Ban Kok Klap they were very numerous in dry jungle but very wary and almost impossible to approach. Mr. Seimund, who obtained one specimen, describes the note as a soft low double whistle. The small native boys occasionally shoot them with pellet bows. They make excellent eating.

* An official corresponding to the District Officer in the Federated Malay States.

"Male, iris dark hazel, bill blackish, yellowish green at tip of lower mandible, reddish at base, orbital skin reddish orange, tarsi and claws waxy yellow."

ROLLULUS ROULROUL.

Rollulus roulroul (Scop.); Ogilvie Grant, tom. cit., p. 225.

Several crested wood quail, which is the commonest game-bird in the jungles of the Malay Peninsula, were shot on Kao Nawng but were consigned to the pot as they were in very poor feather.

2. CALOPERDIX OCULEA.

Caloperdix oculea (Temm.); Ogilvie Grant, tom. cit., p. 222; Robinson and Kloss, Ibis, 1910, p. 671; Robinson, Journ. Fed. Malay States Mus., v., p. 15 (1913).

Evidently very common in Bandon, though we did not ourselves procure specimens. Caged birds were frequently seen in the possession of the local Siamese and a male, recently caught, was purchased at Ban Kok Klap.

GALLUS GALLUS.

Gallus gallus (Linn.); Grant, tom. cit., p. 344.

Gallus bankiva, Robinson and Kloss, tom. cit., p. 673.

Jungle fowl were very numerous in the vicinity of Ban Kok Klap and along the banks of the river, south of that place. No specimens were however preserved. The hens of the local domestic fowl were almost indistinguishable from wild birds.

3. ARGUSIANUS ARGUS.

Argusianus argus (Linn.); Ogilvie Grant, tom. cit., p. 363.

Very numerous on Kao Nawng and not so shy as in many other places though they are much trapped by Siamese as the skins command a good price among the Chinese on the coast. We had not the time to set snares and did not particularly desire specimens, but one female was obtained and one or two males approached and shot at by Seimund. Argus pheasants are poor eating being usually very thin and dry and are not to be compared with peafowl.

4. PAVO MUTICUS.

Pavo muticus, Linn.; Ogilvie Grant, tom. cit., p. 371; Robinson and Kloss, tom. cit., p. 672.

Peafowl were fairly common round the edges of the rice fields at Ban Kok Klap, and two or three were shot for food but not preserved. They were in very poor feather, without trains, which in this district are not assumed until November or December.

TRERONIDÆ.

OSMOTRERON VERNANS.

Osmotreron vernans (Linn.); Salvad., Cat. Birds Brit. Mus., xxi., p. 60 (1893); Robinson and Kloss, tom. cit., p. 674.

One or two specimens of the common green pigeon were shot but not preserved.

COLUMBIDÆ.

TURTUR TIGRINUS.

Turtur tigrinus (Temm. and Knip); Salvad., tom. cit., p. 440; Robinson and Kloss, tom. cit., p. 675.

Exceedingly numerous on the rice stubbles at Ban Kok Klap, in flocks sometimes numbering as many as twenty individuals. No specimens were preserved.

5. CHALCOPHAPS INDICA.

Chalcophaps indica (Linn.); Salvad., tom. cit., p. 514; Robinson and Kloss, tom. cit., p. 675.

Very common as everywhere else in the Peninsula.

CHARADRIIDÆ.

SARCOGRAMMUS ATRINUCHALIS.

Sarcogrammus atrinuchalis, Jerdon; Sharpe, Cat. Birds Brit. Mus., xxiv., p. 152 (1896); Robinson and Kloss, Ibis, 1911, p. 11.

Also very common on the rice fields.

RALLIDÆ.

6. RALLINA FASCIATA.

Rallina fasciata (Raffles); Sharpe, Cat. Birds Brit. Mus., xxiii., p. 75 (1894).

This rail was fairly common at Ban Kok Klap at the edges of the rice fields but only a single male was obtained.

"Iris orange, periocular skin carmine bill greenish horn, blackish on culmen, carmine at base, feet carmine."

CICONIIDÆ.

DISSURA EPISCOPUS.

Dissura episcopus (Bodd.); Sharpe, Cat. Birds Brit. Mus., xxvi., p. 294 (1898); Robinson and Kloss, tom. cit., p. 16.

Common on the rice fields, roosting at night on lofty dead trees at the edge of the jungle.

7. PSEUDOTANTALUS LEUCOCEPHALUS.

Pseudotantalus leucocephalus (Penn.); Sharpe, tom. cit., p. 323.

This is a new record for the Malay Peninsula, though the Museum possesses three specimens collected on Langkawi in December, 1912, and an immature bird shot near Kuala Lumpur in 1911, which was wrongly identified with *Pseudotantalus lacteus*.

In Bandon the species was very common but excessively wary and hard to obtain. It was seen either singly or in small numbers on the rice fields but collected in large flocks towards evening and roosted on lofty trees in company with *Dissura episcopus* and *Graptocephalus davisoni*. In the south of the Peninsula it is replaced by *Ps. lacteus*, which, however, appears to be almost exclusively a marine species.

IBIDIDÆ.

8. IBIS MELANOCEPHALA.

Ibis melanocephala (Lath.); Sharpe, Cat. Birds Brit. Mus., xxvi., p. 8 (1898).

Seimund obtained one specimen out of a large flock feeding on the mud-flats at the mouth of the Bandon river. The species is by no means scarce in the Malay Peninsula but is always very wary and difficult to obtain.

9. GRAPTOCEPHALUS DAVISONI.

Graptocephalus davisoni (Hume); Sharpe, tom. cit., p. 14 (1898); Robinson and Kloss, tom. cit., p. 17.

One male was shot out of a flock roosting on a very lofty tree on the banks of the Bandon river.

ARDEIDÆ.

10. HERODIAS ALBA.

Herodias alba (Linn.); Sharpe, Cat. Birds Brit. Mus., xxvi., p. 90 (1898).

Seimund shot a male from out of a large flock at Bandon on 4th June. The bird is moulting into breeding plumage and the ornamental train is beginning to appear but the feet are dull black and the bill uniform chrome yellow as in the winter plumage. Like other specimens from the Malay Peninsula the size is very small, the dimensions being, wing 12.1, culmen, 4.1 and tarsus, 5.6 inches.

ANATIDÆ.

11. ASARCORNIS LEUCOPTERA.

Asarcornis scutulata (part.) Salvad., Cat. Birds Brit. Mus., xxvii., p. 60 (1895).

Asarcornis leucoptera (Blyth); Robinson and Kloss, tom. cit., p. 19.

Fairly common on the rice fields upcountry in Bandon and almost down to the coast, generally in pairs but sometimes in larger numbers. A male was shot at Ban Kok Klap.

12. DENDROCYCNA JAVANICA.

Dendrocygna javanica (Horsf.); Salvad., tom. cit., p. 156; Robinson and Kloss, tom. cit., p. 21.

Very common in flock of considerable size but rather wild as they are much shot at by the Siamese.

FALCONIDÆ.

13. LOPHOSPIZIAS TRIVIRGATUS.

Astur trivirgatus (Temm.); Sharpe, Cat. Birds Brit. Mus., i., p. 105 (1874).

An immature male, though in very worn plumage with the primaries abraded, has the wing slightly over 9 inches and would therefore appear to belong to the Himalayan and Assamese race. *A. rufitinctus* (McClell.). Specimens from the more southern parts of the Peninsula are decidedly smaller.

"Iris lemon orange, feet chrome yellow."

14. SPILORNIS PALLIDUS.

Spilornis pallidus, Walden; Sharpe, tom. cit., p. 290, pl. ix; Robinson and Kloss, tom. cit., p. 23.

A male from Ban Kok Klap, wing about 14.8 in.

15. MICROHIERAX FRINGILLARIUS.

Microhierax fringillarius (Drap.); Sharpe, tom. cit., p. 367; Robinson and Kloss, tom. cit., p. 24.

One male from Ban Kok Klap.

16. MACHÆRAMPHUS ALCINUS.

Machæramphus alcinus (Westerm.); Sharpe, tom. cit., p. 408.

Coming down stream from Ban Kok Klap we met with two pairs of this rare kite, and Seimund shot a male. They were nesting high up in very lofty trees from which the natives extract dammar (*Dipterocarpus crinitus*) and when disturbed seemed half dazed by the light and flew comparatively slowly.

We were unfortunately unable to spare the time to attempt to secure the eggs. Normally these hawks are crepuscular in their habits feeding on bats and are of very rapid and powerful flight. The species is widely spread throughout the Peninsula and at one time was not uncommon in the vicinity of Kuala Lumpur.

PANDIONIDÆ.

17. POLIOÆTUS HUMILIS.

Polioætus humilis (Müll. and Schleg.); Sharpe, tom. cit., p. 454.

The smaller grey-headed fishing eagle is confined to the upper reaches of the rivers and to jungle country and is not found on the coast or in open country. A female was shot coming down stream from Ban Kok Klap on the Bandon river.

STRIGIDÆ.

18. KETUPA CEYLONENSIS.

Ketupa ceylonensis (Gm.); Sharpe, Cat. Birds Brit. Mus., ii., p. 4 (1875); Robinson and Kloss, tom. cit., p. 30.

Not so common as the succeeding species. One specimen was secured near Ban Kok Klap.

19. KETUPA JAVANENSIS.

Ketupa javanensis (Less.); Sharpe, tom. cit., p. 8; Robinson and Kloss, tom. cit., p. 30.

Very common throughout the Peninsula, wherever there are extensive rice fields.

20. GLAUCIDIUM BRODIEI.

Glaucidium brodiei (Burton); Sharpe, tom. cit., p. 212.

A female, precisely agreeing with specimens from the hills of South Perak and Selangor, was obtained at between 3,000 feet and 4,000 feet on Kao Nawng.

21. SCOPS LEMPIJI.

Scops lempiji (Horsf.); Sharpe, tom. cit., p. 91; Robinson and Kloss, tom. cit., p. 31.

A female from Ban Kok Klap.

22. HETEROSCOPS VULPES.

Pisorhina luciae, Hartert, Nov. Zool., ix., p. 541 (1902).

Heterosops vulpes, Ogilvie Grant, Bull. B.O.C., xix., p. 11 (1906); Id. Journ. Fed. Malay States Mus., iii., p. 51, pl. iii (1908).

An adult female from 3,500 feet on Kao Nawng.

Compared with four skins from Selangor and Perak this specimen is much more uniform foxy brown above with the black markings much reduced in amount. Below, it is paler in tint, vinaceous brown with the middle of the abdomen and the under tail-coverts almost pure white. The differences are quite striking but in so very variable a group as the scops owls it is not advisable to describe a new species on a single individual only.

PSITTACIDÆ.

23. LORICULUS VERNALIS.

Loriculus vernalis (Sparrm.); Salvad., Cat. Birds Brit. Mus., xx., p. 517 (1891); Robinson and Kloss, tom. cit., p. 32.

Three females from Ban Kok Klap.

"Iris white, bill orange, feet lemon orange."

ALCEDINIDÆ.

24. ALCEDO EURYZONA.

Alcedo euryzona, Temm.; Sharpe, Cat. Birds Brit. Mus., xvii., p. 158 (1892); Robinson and Kloss, tom. cit., p. 33.

Quite common in those parts of Bandon visited by us wherever running water and jungle occur but most abundant on the lower slopes of the mountains. The birds are very shy and restless, never staying long in one place, but we procured four specimens, two males and two females, near the lower camp on Kao Nawng.

"Male, iris dark hazel, bill black, the tip white, feet pale flesh. Female, bill blackish, reddish brown at the base of the lower mandible with the tip whitish."

25. CEYX EUERYTHRA.

Ceyx euerythra, Sharpe, tom. cit., p. 179; Robinson and Kloss, tom. cit., p. 33.

Not very common; we only procured one specimen at Ban Kok Klap.

26. CARCINEUTES PULCHELLUS.

Carcineutes pulchellus (Horsf.); Sharpe, tom. cit., p. 198; Robinson and Kloss, tom. cit., p. 34.

A female from Kao Nawng and a male from Ban Kok Klap.

"Male, iris hazel, bill vermilion, feet orange brown."

27. HALCYON SMYRNSIS.

Halcyon smyrnensis (Linn.); Sharpe, tom. cit., p. 222; Robinson and Kloss, tom. cit., p. 34.

Common everywhere in the rice fields.

MEROPIDÆ.

28. MELITTOPHAGUS SWINHOII.

Melittophagus swinhoii (Hume); Sharpe, Cat. Birds Brit. Mus., xvii., p. 55 (1892); Robinson and Kloss, op. cit., p. 36.

Common in open country throughout the district traversed.

29. MEROPS SUMATRANUS.

Merops sumatranus, Raffles; Sharpe, tom. cit., p. 61; Robinson and Kloss, p. 37.

In similar situations to the preceding but not so common. An immature female with the top of the head uniform in colour with the mantle was obtained at Bandon on 10th July.

30. NYCTIORNIS AMICTA.

Nyctiornis amicta (Temm.); Sharpe, tom. cit., p. 90; Robinson and Kloss, p. 37.

Perhaps not so common as in the more southern parts of the Peninsula, though it was seen on Kao Nawng up to about 2,000 feet and obtained at Ban Kok Klap and Bandon.

TROGONIDÆ.

31. PYROTROGON ORESCIUS.

Harpactes orescius (Temm.); Ogilvie Grant, Cat. Birds Brit. Mus., xvii., p. 494 (1892).

Pyrotrogon orescius, Robinson and Kloss, tom. cit., p. 39.

Fairly common near Ban Kok Klap, whence four specimens were obtained. Our Dyaks however always rather shirk shooting both this and other species of the genus, partly from the fact that they are omen birds and therefore unlucky to kill but principally for the more material reason that they are exceedingly troublesome to skin.

CUCULIDÆ.

32. HIEROCOCCYX NISICOLOR.

Hierococcyx fugax (Horsf.); Shelley, Cat. Birds Brit. Mus., xix., p. 236 (1891).

Hierococcyx nasicolor (Hodgs.); Robinson and Kloss, tom. cit., p. 40.

An adult of undetermined sex from Ban Kok Klap.

"Iris hazel, feet and claws chrome, bill yellowish green at base, black at tip of lower mandible and on culmen, orbital skin rich lemon."

33. CHALCOCOCCYX ZANTHORHYNCHUS.

Chalcococcyx zanthorhynchus (Horsf.); Shelley, tom. cit., p. 289; Robinson and Kloss, tom. cit., p. 41.

This beautiful little cuckoo was fairly common at Ban Kok Klap, where two adult males and an immature female, with the head almost uniform chestnut and with but little greenish gloss on the dark bars of the upper surface, were obtained.

Adult male "Iris red, orbital skin vermilion, bill orange, vermilion at base, feet greenish slate."

In the south of the Peninsula both this species and the emerald cuckoo, *Ch. maculatus* are rare and possibly only seasonal visitors, but in the northern districts both species are much commoner.

34. CENTROPUS SINENSIS INTERMEDIUS.

Centroccocyx intermedius (Hume); Stray Feath., i., p. 454 (1873).

Centropus sinensis (Steph.); Shelley, tom. cit., p. 343; Robinson and Kloss, tom. cit., p. 41.

Centropus sinensis intermedius, Stresemann, Nov. Zool., xx., p. 322 (1913).

A single female, wing 212 mm., from Ban Kok Klap.

"Iris carmine, bill and feet black."

As Stresemann (*loc. cit.*) states the forms of pheasant cuckoo inhabiting the northern and southern districts are quite distinguishable, the present race being considerably smaller, especially in the length of the tail; the interscapular region is also of a darker chestnut. The name applicable to the southern race is *Centropus sinensis bubutus*, Horsf. [*Trans. Linn. Soc.*, xiii., p. 180 (1822)].

35. UROCOCCYX ERYTHROGNATHUS.

Urococcyx erythrognaethus (Hartl.); Shelley, tom. cit., p. 398
Robinson and Kloss, tom. cit., p. 43.

Exceedingly common both in primary and secondary jungle.
"Male, iris pale blue, female, orange."

36. RHOPODYTES TRISTIS.

Rhopodytes tristis (Less.); Shelley, tom. cit., p. 386; Robinson and Kloss, tom. cit., p. 42.

A female was shot on the upper portion of Kao Nawng at about 3,000 feet. The species is extremely common throughout the country in the northern parts of the Peninsula, though in the south it is only found at elevations above 3,000 feet.

37. ZANCLOSTOMUS JAVANICUS.

Zanclostomus javanicus (Horsf.); Shelley, tom. cit., p. 370; Robinson and Kloss, tom. cit., p. 42.

Very common in jungle near Ban Kok Klap, though we did not trouble to collect many specimens.

CAPITONIDÆ.

38. CHOTORHEA CHRYSOPOGON.

Chotorhea chrysopogon (Temm.); Shelley, Cat. Birds Brit. Mus., xix., p. 57 (1891); Robinson and Kloss, tom. cit., p. 43.

Common in the jungle on Kao Nawng as elsewhere in the Peninsula.

"Iris hazel grey, bill black, whitish at base, feet greenish."

39. CHOTORHEA MYSTACOPHANES.

Cyanops mystacophanes (Temm.); Shelley, tom. cit., p. 72.

Chotorhea mystacophanes, Robinson and Kloss, tom. cit., p. 43.

Very common on Kao Nawng; rarer in the southern parts of the Peninsula.

"Iris hazel, bill black, feet greenish."

40. CYANOPS DAVISONI.

Cyanops davisoni (Hume); Shelley, tom. cit., p. 65, pl. IV, fig. 1.

Two specimens of this species were obtained by the Dyaks at the upper camp on Kao Nawng between three and four thousand feet. The locality is a considerable extension of range for the species which has not hitherto been known south of Central Tenasserim.

41. MESOBUCCO CYANOTIS.

Mesobucco cyanotis (Blyth); Shelley, tom. cit., p. 87; Robinson and Kloss, tom. cit., p. 43.

The adults are quite typical specimens of this race with blue ear coverts unmixed with black. The species is found both in jungle and in open country.

42. ZANTHOLÆMA HÆMATOCEPHALA.

Zantholæma hæmatocephala (Mull.); Shelley, tom. cit., p. 89; Robinson and Kloss, tom. cit., p. 44.

The Coppersmith was fairly common in the low country and its note was often heard, though only one specimen was actually obtained.

PICIDÆ.

43. GECINUS VIRIDANUS.

Gecinus viridanus (Blyth); Hargitt, Cat Birds Brit. Mus., xviii., p. 47 (1890); Robinson and Kloss, tom. cit., p. 45.

Two males and a female from the open country round Ban Kok Klap.

44. CHRYSOPHLEGMA MALACCENSE.

Chrysophlegma malaccense (Lath.); Hargitt, tom. cit., p. 122; Robinson and Kloss, tom. cit., p. 46.

A single male from Ban Kok Klap.

45. CHRYSOPHLEGMA HUMII.

Chrysophlegma humii, Hargitt, tom. cit., p. 126; Robinson and Kloss, tom. cit., p. 46.

Two females from Kao Nawng.

"Iris hazel brown, upper mandible plumbeous green, lower greenish horn, feet greenish."

46. GECINULUS VIRIDIS.

Gecinulus viridis (Blyth); Hargitt, tom. cit., p. 136.

A single female from Ban Kok Klap, shot among bamboos.

47. MIGLYPTES GRAMMITHORAX.

Miglyptes grammithorax (Malh.); Hargitt, tom. cit., p. 385; Robinson and Kloss, tom. cit., p. 46.

Three females from Kao Nawng.

"Iris chestnut, feet plumbeous green bill lead colour."

48. MICROPTERNUS BRACHYURUS.

Micropternus brachyurus (Vieill.); Hargitt, tom. cit., p. 396.

A male from Ban Kok Klap.

49. TIGA JAVANENSIS.

Tiga javanensis (Ljung); Hargitt, tom. cit., p. 412; Robinson and Kloss, tom. cit., p. 47.

A single female from Ban Kok Klap.

50. ALOPHONERPES PULVERULENTUS.

Hemilophus pulverulentus (Temm.); Hargitt, tom. cit., p. 494.

Alophonerpes pulverulentus, Robinson and Kloss, tom. cit., p. 47.

A very young male was brought in by natives at Ban Kok Klap.

51. SASIA ABNORMIS.

Sasia abnormis (Temm.); Hargitt, tom. cit., p. 557; Robinson and Kloss, tom. cit., p. 48.

A female from Kao Nawng.

EURYLÆMIDÆ.

52. CALYPTOMENA VIRIDIS.

Calyptomena viridis, Raffles; Selater, Cat. Birds Brit. Mus., xiv., p. 456 (1888); Robinson and Kloss, tom. cit., p. 48.

Common.

"Iris hazel, bill and feet yellowish green."

A nest was found on 25th June hanging from a bough over water. It resembles the nest of the Rouge-et-Noir Broadbill, *Cymbirhynchus macrorhynchus*, and is an elongated bag-shaped structure composed of dead leaves and interwoven fibre, with the entrance at the side near the top. It contained two eggs, which were hard set. They are light creamy yellow in colour, somewhat glossy and in shape are elongated ovals measuring, A. 21.7×31 , B. 21.2×31.5 mm., approximately, the eggs being very much broken.

53. EURYLÆMUS JAVANICUS.

Eurylæmus javanicus, Horsf.; Selater, tom. cit., p. 463.

A male, female, and an immature female are in the collection, from the lower slopes of Kao Nawng, where it is rather commoner than the preceding species.

"Iris blue, bill robins' egg blue, tip of upper mandible greenish, tomtia of both mandibles black, feet dirty pink."

54. EURYLÆMUS OCHROMELAS.

Eurylæmus ochromelas, Raffles; Selater, tom. cit., p. 465; Robinson and Kloss, tom. cit., p. 50.

In deep jungle on Kao Nawng, at 1200-1500 feet; not particularly common.

"Iris lemon yellow, bill robins' egg blue, black on edges, greenish on upper mandible, feet dirty pinkish brown."

55. CYMBIRHYNCHUS MALACCENSIS.

Cymbirhynchus macrorhynchus (Gm.); Selater, tom. cit., p. 468 (partim).

Cymbirhynchus malaccensis, Salvad, Atti. R. Accad. Tor., ix, p. 425; Robinson and Kloss, tom. cit., p. 50.

Not found in very deep jungle on the slopes of the mountains but abundant along the courses of the larger rivers, the large untidy nests, resembling debris from floods hanging from pendant bamboos over the water.

56. SERILOPHUS ROTHSCILDI.

Serilophus rothschildi, Hartert and Butler, Bull. B.O.C., lix, p. 50 (1898); iid., Ibis, 1898, p. 434.

Five specimens were collected on Kao Nawng, adults and young.

"Male, iris hazel, bill pale blue, tomtia white, base including nostrils orange, periocular space, wax-yellow, feet the same, tinged with greenish claws bluish."

Compared with specimens of the true *S. rothschildi* from the mountains of Perak and Selangor these specimens show a very decided approach to *S. lunatus*, Gould, which is found throughout the greater portion of Tenasserim. The head and ear-coverts are tinged with clay brown not almost pure gray as in *S. rothschildi*, and the chestnut of the secondaries and tertiaries is much paler. The two forms are evidently only subspecies and grade completely into one another.

PITTIDÆ.

57. PITTA CYANOPTERA.

Pitta cyanoptera (Temm.); Slater, tom. cit., p. 420; Robinson and Kloss, tom. cit., p. 48.

The commonest of the genus round Ban Kok Klap but not found in very deep jungle. Nestling birds and a clutch of five eggs were obtained, the male bird being shot off the nest, which was a globular mass of dead leaves and rubbish on the ground. The young birds are much duller above and have the scarlet of the abdomen and under tail coverts of the adult birds indicated by salmon pink. The base and tip of the bill are orange red. The eggs were hard set and are obtuse ovals, fairly glossy and yellowish white in colour. Thinly spotted, mainly towards the larger end with small rounded spots of purish brown. They measure, A. 26.1×20 ; B. 25.9×20.2 ; C. 25.8×20 mm.

58. PITTA CUCULLATA.

Pitta cucullata, Hartl.; Slater, tom. cit., p. 442; Robinson and Kloss, tom. cit., p. 49.

Two were obtained at Ban Kok Klap.

59. EUCICHLA GURNEYI.

Eucichla gurneyi, Hume; Slater, tom. cit., p. 448; Robinson and Kloss, tom. cit., p. 49.

Very common indeed in the neighbourhood of Ban Kok Klap but not extending far up the slopes of Kao Nawng as it was not met with at either of our camps on that mountain.

60. EUCICHLA BOSCHI.

Eucichla boschi, Müll. and Schleg.; Slater, tom. cit., p. 447; Robinson and Kloss, tom. cit., p. 49.

Even commoner than *Eu. gurneyi* and extending further up the hill being found at over 2,000 feet elevation.

"Male, iris hazel, bill black, feet lavender in front, pinkish behind."

A nest was found on our way up Kao Nawng at about 700 feet on 10th June, 1913. It was placed in a small sapling about six or seven feet above the ground and consisted of a globular mass of dead leaves and fibre about the size of a man's head. It contained three eggs. They are broad blunt ovals in shape, moderately glossy, white and thickly spotted especially towards the broader end with dark purplish brown spots and streaks, some of the markings being beneath the surface of the shell.

The measurements are : A. 24.2×20.7 , B. 25×21 , C. 25.2×21 mm.

HIRUNDINIDÆ.

61. HIRUNDO BADIA.

Hirundo badia, Cass.; Sharpe, Cat. Birds Brit. Mus., x., p. 166; Robinson and Kloss, tom. cit., p. 50.

Common round the limestone hills in the vicinity of Ban Kok Klap.

MUSCICAPIDÆ.

62. CYORNIS DIALILEMA.

Cyornis dialilema Salvad., Ann. Mus. Civ. Gen., -xxvii., p. 387 (1889); Robinson and Kloss, tom. cit., p. 52.

A couple of males in rather shabby plumage appear to be conspecific with specimens from Trang which we have identified with this form which seems to range down the Peninsula as far south as Selangor, where however it is only met with at considerable elevations. I must confess that I am unable to separate with any confidence males of *C. tickellix*, Blyth; *C. sumatrensis*, Sharpe; *C. dialilema*, Salvad.; *C. rubeculoides* (Vig.) and another from allied to *C. nigrigularis*, Everett; all of which occur in the Malay Peninsula, though the first two forms have both sexes closely resembling each other while in the last three the females have no tinge of blue on the plumage.

63. ERYTHROMYIAS MUELLERI.

Erythromyias muelleri (Blyth); Sharpe, tom. cit., p. 200, pl. iv, fig. 2; Robinson Journ. Fed. Malay States Mus., ii, p. 188 (1909).

An adult female and two very young birds were obtained between 12-1500 feet on Kao Nawng.

"Iris dark, bill black, feet pale flesh."

This is the most northerly recorded locality for the species, which is a purely Malayan form, fairly common throughout the Peninsula at medium elevations and also found in Sumatra and Borneo. The adult bird is perfectly typical.

64. ANTHIPES SUBMONILIGER.

Anthipes submoniliger (Hume) ; Stray. Feath., v, p. 105 (1877).

Digenea submoniliger, Sharpe, Cat. Birds Brit. Mus., iv, p. 461 (1879) ; id. P.Z.S. (1888), pp. 246, 7.

This species was common at the top of Kao Nawng at over 4,000 feet and also occurred, though less numerously, at our lower camp.

Comparison of the series obtained with a large number of specimens from the more southern parts of the Peninsula, representing *A. malayana*, Sharpe, enables us to state with certainty that they do not belong to this form but are to be referred to the Tenasserim race, described by Hume from Mt. Muleyit. We have however recently collected in West Sumatra specimens of *A. solitaria* described by Müller in 1835, and comparison of these with skins from the actual type locality of *A. malayana* shows that the two races are absolutely identical as was not unexpected. Sharpe's name for the Peninsular race must therefore be suppressed.

65. ANTHIPES OLIVACEA.

Cyornis olivacea, Hume ; Stray Feath., v, p. 338 (1877) ; id. vi, p. 229 (1878).

Siphia olivacea, Sharpe, Cat. Birds Brit. Mus., iv, p. 457 (1879).

Anthipes olivaceus, Oates, Faun. Brit. Ind. Birds., ii, p. 34 (1890).

Fairly common on the lower slopes of Kao Nawng, also obtained at Trang on the west side of the Peninsula in 1910.

"Iris hazel, bill black, feet pale purplish flesh.

The sexes are alike and the nestling bird has the ordinary mottled plumage characteristic of the flycatchers, the wing coverts broadly tipped with yellowish buff.

I am by no means sure that this species is rightly placed with *Anthipes* by Oates ; except for the comparative feebleness of the rictal bristles and the rather weaker bill it might well be regarded as a *Rhinomyias*, with which genus the type of plumage better accords.

66. HYPOTHYMIS AZUREA.

Hypothymis azurea (Bodd.) ; Sharpe, tom. cit., p. 274 ; Robinson and Kloss, tom. cit., p. 53.

Hypothymis azurea prophata, Oberholser, Proc. U.S. Nat. Mus., xxxix, p. 597 (1911).

We only got one specimen in Bandon and it was not common in Trang.

67. TERPSIPHONE AFFINIS.

Terpsiphone affinis, Blyth ; Sharpe, tom. cit., p. 349 ; Robinson and Kloss, tom. cit., p. 53.

Very common throughout the country.

68. PHILENTOMA VELATUM.

Philentoma velatum (Temm.); Sharpe, tom. cit., p. 365.

A pair from Kao Nawng.

"Male and female, iris crimson, bill and feet black."

69. PHILENTOMA PYRRHOPTERUM.

Philentoma pyrrhopterum (Temm.); Sharpe, tom. cit., p. 366;
Robinson and Kloss, tom. cit., p. 53.

More abundant than *Ph. velatum* though in most localities the contrary is the case.

"Male, iris carmine, bill black, feet livid lead grey."

70. CULICICAPA CEYLONENSIS.

Culicicapa ceylonensis (Swains.); Sharpe, tom. cit., p. 369.

Fairly common on Kao Nawng.

"Male, iris dark hazel, upper mandible brown, lower fleshy brown, gape yellow, feet yellowish brown, soles brighter yellow.

71. CRYPTOLOPHA YOUNGI, sp. nov.

The only specimen of this very distinct flycatcher was obtained by one of our Dyak collectors on Kao Nawng at about 3,500 feet.

It is unfortunately very badly shot and in moult but it is evident that it represents a perfectly good new species, allied to, but readily separable from, *C. castaneiceps* of the Himalayas and Northern Tenasserim and *C. butleri* of the mountains of the southern Malay Peninsula.

Differs from all other members of the group in having the under tail coverts greyish white and the rump clear grey, the bases of the feathers paler.

Adult male. Crown chestnut, bordered by black on each side, sides of the head and lores grey, upper surface dark grey, paler on the rump, the scapulars only tinged with green. Primaries and wing coverts blackish brown, edged with greenish and with two bright yellow bars on the external aspect of the wing formed by the tips of the lesser and greater wing coverts. Under wing coverts and lengthened axillaries bright yellow; whole under surface and under tail coverts pearly grey, whiter on the middle of the abdomen and the under tail coverts; thighs yellowish green. Tail feathers brownish black-edged with greenish. Total length about 3.25, wing 1.9, tail 1.70, tarsus 0.68 inches.

I have named this species after Arthur Young, K.C.M.G., Governor of the Straits Settlements and High Commissioner of the Malay States, to whom I am indebted for permission to collect in Lower Siam and for facilities obtained from the Siamese authorities.

Type and only specimen obtained. Adult male, Kao Nawng, 3,500 feet, Bandon, N.E. Malay Peninsula, 26th June, 1913.

72. ABRORNIS SCHWANERI.

Cryptolopha schwaneri (Blyth.); Sharpe, tom. cit., p. 403.

Abrornis schwaneri, Robinson, Journ. Fed. Malay States Mus., ii, p. 191 (1908).

Five specimens from Kao Nawng and Ban Kok Klap are undoubtedly this species, originally described from Borneo, and not the Himalayan *A. superciliaris*, Tickell from the Himalayas down to Tenasserim. Tickell's type, however, came from somewhere in Tenasserim and if as is quite possible his specimen proves to be conspecific with the Bornean bird, his name falls and the birds from Sikkim and the Himalayas will have to be known as *A. flaviventris*, Jerd.

Common throughout the Peninsula especially in bamboo jungle; but not found at low elevations in the south.

"Iris dark brown, bill plumbeous horn, pinkish at tomia and gape, feet brownish flesh.

CAMPOPAGIDAE.

73. CAMPOPAGA NEGLECTA.

Campophaga neglecta (Hume); Sharpe, Cat. Birds Brit. Mus., iv, p. 68 (1879); Robinson and Kloss, tom. cit., p. 54.

Not common.

74. PERICROCOTUS FLAMMIFER.

Pericrocotus flammifer, Hume; Sharpe, tom. cit., p. 74; Robinson and Kloss, tom. cit., p. 54.

Very common on Kao Nawng but very wild and hard to obtain

75. PERICROCOTUS IGNEUS.

Pericrocotus igneus (Blyth); Sharpe, tom. cit., p. 78.

A pair from Ban Kok Klap.

PYCNONOTIDÆ.

76. ÆGITHINA TIPHIA.

Ægithina tiphia (Linn.); Sharpe, Cat. Birds Brit. Mus., vi, p. 7 (1881); Robinson and Kloss, tom. cit., p. 55.

A single female.

77. ÆTHORHYNCHUS LAFRESNAYEI.

Æthorhynchus lafresnayei (Hartl.); Sharpe, tom. cit., p. 14; Robinson and Kloss, tom. cit., p. 55.

Quite common.

78. CHLOROPSIS CHLOROCEPHALA.

Chloropsis chlorocephala (Wald.); Sharpe, tom. cit., p. 28; Robinson and Kloss, tom. cit., p. 55.

Common; the only green bulbul met with in Bandon.

79. IRENA PUELLA.

Irena puella (Lath.); Sharpe, tom. cit., p. 177; Robinson and Kloss, tom. cit., p. 56.

Common on Kao Nawng.

80. HEMIXUS MALACCENSIS.

Hemixus malaccensis (Blyth); Sharpe, tom. cit., p. 52; Robinson and Kloss, tom. cit., p. 56.

A single male from Kao Nawng.

81. IOLE PERACENSIS.

Iole tickelli peracensis, Hartert and Butler, Nov. Zool., v, p. 509 (1898).

A single male, shot on Kao Nawng at about 3,000 feet, is precisely identical with specimens from the typical locality, Gunung Ijau, Larut hills, Perak.

82. CRINIGER SORDIDUS.

Criniger sordidus, Richmond, Proc. U.S. Nat. Mus., xxii, p. 320 (1900); Robinson and Kloss, tom. cit., p. 57.

Two specimens from Kao Nawng, one from over 3,000 feet and another from about 1,200 feet, agree with authentic specimens of this race from Trang, but as we have noticed elsewhere the differences from *C. ochraceus*, Moore, are extremely indefinite. Specimens from Perlis are quite intermediate.

"Iris brownish red, bill plumbeous, paler below, feet plumbeous with pink soles."

83. PYCNONOTUS ROBINSONI.

Pycnonotus robinsoni, Ogilvie Grant, Fascic. Malay. Zool., iii, p. 85 (1905). Kloss, Journ. Fed. Malay States Mus., iv, p. 231 (1911).

Pycnonotus blanfordi, Bonhote (nec Jerd.), P.Z.S. 1901 (i), p. 57.

The species also occurs in Trang but was overlooked in the account of the collection from that province; it has also been obtained in the State of Perlis while the Biserat specimen identified by Bonhote as *P. blanfordi* (loc. cit. supra) is almost certainly identical. The species was common in the low country in Bandon province and a pair were obtained at Ban Kok Klap.

84. OTOCOMPSA EMERIA.

Otocompsa jocosa (Linn.); Sharpe, tom. cit., p. 157.

Otocompsa emeria, Robinson and Kloss, tom. cit., p. 58.

Very much rarer in Bandon than in Trang. A single male only was obtained at Ban Kok Klap.

TIMELIIDÆ.

85. EUPETES MACROCERCUS.

Eupetes macrocercus, Temm.; Sharpe, Cat. Birds Brit. Mus., vii, p. 338 (1883).

Fairly common on Kao Nawng, this being the most northerly locality recorded for the species. A ground bird having very much the habits of a Pitta. An adult female and three very young birds were procured. Very young birds are uniform sooty black beneath, except the throat which is white, but the chestnut rufous of the adult soon begins to make its appearance.

"Adult, iris hazel, bill black, feet slate, skin on sides of neck, purplish violet, shading into livid white. Immature, iris hazel, bill black, yellow at gape, feet slate, naked skin at sides of neck, pinkish."

86. TROCHALOPTERUM PENINSULÆ.

Trochalopectum peninsulæ, Sharpe, P.Z.S. 1887, p. 436, pl., xxxvii.

A pair from 3,500 feet on Kao Nawng, agree very closely with specimens from the typical locality except that the crown is very slightly paler, therein showing an approach to *T. melanostigma* which ranges south to Muleyit Mt. and the Salwin river.

87. POMATORHINUS OLIVACEUS.

Pomatorhinus olivaceus, Blyth; Sharpe, Cat. Birds Brit. Mus., vii, p. 414 (1883); Robinson and Kloss, tom. cit., p. 59.

Fairly common on Kao Nawng from about 1,200 feet to the summit of the mountain.

"Iris orange, bill chrome yellow, feet pale grey, soles greenish yellow, claws horn."

88. PELLORNEUM SUBOCHRACEUM.

Pellorneum subochraceum, Swinh.; Sharpe, tom. cit., p. 521; Robinson and Kloss, tom. cit., p. 59.

Fairly common in Bandon, generally in secondary jungle and in patches of scrub at the edge of rice fields.

89. TURDINUS OLIVACEUS.

Malacopteron olivaceum, Strickland, Ann. and Mag. Nat. Hist., xix, p. 132 (1847).

Turdinus abbotti (Blyth); Sharpe, tom. cit., p. 541; Robinson and Kloss, tom. cit., p. 59.

Fairly common. The five specimens before me from Kao Nawng are somewhat brightly coloured beneath, therein approaching the northern race *T. abbotti*, of which this form is only a subspecies.

90. TURDINUS MAGNIROSTRIS.

Turdinus magnirostris (Moore); Sharpe, tom. cit., p. 547.

Common on Kao Nawng.

"Adult, iris red, bill plumbeous grey, slightly yellow on tomtia and at gape, feet pale grey, yellowish on toes. Immature, iris hazel grey, feet pale flesh, bill, upper mandible greenish horn, lower waxy yellow, gape bright yellow, orbital skin greenish yellow."

91. DRYMOCATAPHUS NIGRICAPITATUS.

Drymocataphus nigricapitatus (Eyton); Sharpe, tom. cit., p. 554; Robinson and Kloss, tom. cit., p. 60.

Rare; only one specimen was obtained in jungle near Ban Kok Klap.

92. DRYMOCATAPHUS TICKELLI.

Drymocataphus tickelli (Blyth); Sharpe, tom. cit., p. 557; Robinson and Kloss, tom. cit., p. 60.

As elsewhere in the Peninsula very common on Kao Nawng among bamboos.

"Iris chestnut red, feet pinkish flesh, bill plumbeous, darker on upper mandible."

93. CORYTHOCICHLA LEUCOSTICTA.

Corythocichla leucosticta, Sharpe, P. Z. S. 1887, p. 438; Robinson and Kloss, tom. cit., p. 61.

This babbler was very common on Kao Nawng, ranging from the foot of the mountain to the summit and also occurred nearly at sea-level at Ban Kok Klap, though in the Federated Malay States it is not found below 2,500 feet.

A series of ten specimens compared with large numbers from more southern localities including the actual type locality of the species show very intangible differences though the ground colour of the upper surface is perhaps rather lighter in the Bandon birds.

Three forms of the genus,* the present one, *C. striata* from Assam and Manipur, and *C. brevicaudata* from Muleyit in Tenasserim are extremely closely related and as might be expected the Malayan race is more closely connected with the Muleyit one with which it agrees in having the tips of the wing coverts white, not fulvous, and the sides of the head ashy not brown. Indeed they are quite possibly identical.

"Iris carmine, tarsi brownish, bill plumbeous horn, darker on culmen."

94. ALCIPPE PHAYRII.

Alcippe phayrii, Blyth; Sharpe, tom. cit., p. 623; Robinson and Kloss, tom. cit., p. 61.

* *C. crassa*, Sharpe, from the mountains of N. Borneo seems rather more distinct.

Almost the commonest bird in the jungle on Kao Nawng, keeping generally to the bushes and smaller trees. We did not obtain it near Ban Kok Klap so that it is evidently a submontane species, replaced in the south of the Peninsula by *A. peracensis*, Sharpe.

"Iris hazel-grey feet dark fleshy brown, bill, upper mandible corneous tip and edges dull yellow, lower mandible more broadly yellow, gape bright yellow, orbital ring greenish waxy yellow.

95. *ALCIPPE CINEREA*.

Alcippe cinerea, Blyth; Sharpe, tom. cit., p. 622; Robinson and Kloss, tom. cit., p. 61.

A pair only from Kao Nawng, where it was rare. The species does not extend into Tenasserim and these specimens are the most northerly recorded.

96. *STACHYRIS DAVISONI*.

Stachyris davisoni, Sharpe; Bull. B.O.C., i, p. vii, (1892); Robinson and Kloss, tom. cit., p. 61.

A large series from Kao Nawng where it ranges up to about 2,000 feet. Comparison of these birds with numerous specimens from the typical locality (Tahan river, Pahang) show that they are identical. *St. nigriceps* (Hodgs), which I had included in the local list on the strength of birds from Trang identified as such Mr. Richmond must therefore be deleted from the Malayan Fauna.

"Iris chestnut hazel, bill plumbeous, darker on culmen; feet greenish lead."

97. *STACHYRIDIPSIS CHRYSOPS*.

Stachyris chrysaëa bocagii, Salvad; Robinson Journ. Fed. Malay States Mus., ii, p. 202.

Stachyris chrysops, Richmond, Proc. Biol. Soc., Washington, xv, p. 157 (1902).

Four specimens of this golden babbler were obtained near the summit of Kao Nawng and must certainly be conspecific with *St. chrysops* obtained in the mountains of Trang, about 80 miles to the south.

At one time I thought that the Malayan form might be identical with the Sumatran race but examination of a series collected on the hills of that island shows that the insular form is a darker and duller form, even darker than *St. assimilis* (Walden) from Assam and Central Tenasserim, especially on the flanks.

Pending direct comparison of series of fresh specimens from the Himalayas, Assam, Tenasserim, Sumatra and the Malay Peninsula, I have thought it best to let the Malayan specimens stand under Richmond's name though it is evident that *St. chrysaëa* (Hodgs); *St. assimilis* (Walden); *St. bocagii*, Salvad and *St. chrysops*, Richm are all but slightly differentiated subspecies.

98. THRINGORHINA GUTTATA.

Stachyris guttata (Tick.) ; Sharpe, tom. cit., p. 535.

Thringorhina guttata, Oates, Faun. Brit. Ind. Birds, i, p. 155 (1889).

Tickell's spotted babbler was very common on Kao Nawng keeping to bushes and low trees in parties of two or three. It has also been obtained in the West Coast State of Trang by Dr. W. L. Abbott but has not yet been met with further south in the Peninsula.

"Iris chestnut, bill slate, darker on culmen, feet greenish.

99. CYANODERMA ERYTHROPTERUM.

Mixornis erythroptera (Blyth) ; Sharpe, tom. cit., p. 580.

Cyanoderma erythropteron, Robinson and Kloss, tom. cit., p. 62.

A single male from Ban Kok Klap.

100. CHALCOPARIA PHÆNICOTIS.

Anthothreptes phænicotis (Temm.) ; Gadow, Cat. Birds Brit. Mus., ix, p. 121 (1881).

Chalcoparia phænicotis (Temm.) ; Oates, Faun. Brit. Ind. Birds, ii, p. 373 (1890).

A single female from Ban Kok Klap.

It is, I think, obvious as Oates (*loc. cit.*) has pointed out that this bird is misplaced among the *Nectariniidæ* and that its proper position is somewhere among the *Timeliidæ*.

101. MIXORNIS GULARIS.

Mixornis gularis (Raffles) ; Sharpe, tom. cit., p. 576 ; Robinson and Kloss, tom. cit., p. 62.

Four specimens from Kao Nawng and others from Trang, Terutau and Perlis are not typical *M. gularis* but are intermediate between that species and *M. rubricapilla*. They resemble the latter in having the mantle and external aspect of the primaries more olive and less chestnut and the former in the broadness of the black streaks on the throat and upper breast.

102. BRACHYPTERYX WRAYI.

Brachypteryx wrayi, Ogilvie Grant, Bull. B.O.C., xix, p. 10 (1906) ; id. Journ. Fed. Malay States Mus., iii, p. 26 (1908).

A male and a female from 4,000 feet, Kao Nawng, both of which are in the brown plumage agree precisely with others from Gunong Tahan and from the main peninsular range in Perak and Selangor.

103. SIVA SORDIDIOR.

Siva sordidior, Sharpe, P.Z.S. 1888, p. 276.

Five specimens from about 3,000 feet on Kao Nawng are in such faded and abraded plumage that their identification is a matter of some

uncertainty. They appear, however, to belong to this form and not to the more northern *S. sordida*, Hume, which is found on Mt. Muleyit in Central Tenasserim.

104. *HERPORNIS ZANTHOLEUCA*.

Herpornis zantholeuca (Hodgs.); Sharpe, tom. cit., p. 636; Robinson and Kloss, tom. cit., p. 63.

Eleven skins from the lower slopes of Kao Nawng, where it was one of the commonest birds.

105. *PTERYTHIUS ÆRALATUS*.

Pterythius æralatus (Tick.); Gadow, Cat. Birds Brit. Mus., viii, p. 114 (1883); Oates Faun. Brit. Ind. Birds, i, p. 225 (1889).

A very common species above 2,000 feet on Kao Nawng.

"Iris chestnut, bill black on culmen, remainder plumbeous, feet pale flesh, claws dark."

106. *MESIA ARGENTAURIS*.

Mesia argentauris (Hodgs.); Sharpe, tom. cit., p. 642.

Apparently quite common above 3,000 feet; five specimens were obtained by the Dyaks in the vicinity of the upper camp on Kao Nawng.

TROGLODYTIDÆ.

107. *PNŒPYGA PUSILLA*.

PNœpyga pusilla, Hodgs.; Sharpe, Cat. Birds Brit. Mus., vi, p. 304 (1881).

A pair of hill-wrens from near the summit of Kao Nawng at about 4,000 feet differ from others from the southern parts of the Peninsula, of which the Museum possesses a large series in being rather duller above and in having the lower surface much less strongly squamate. They are probably referable to the above-named species, which has been found as far south as Muleyit Mountain in Central Tenasserim, while the southern Malayan specimens have been identified with *Pn. lepida*, Salvad. from the mountains of Sumatra.

TURDIDÆ.

108. *HYDROCICHLA RUFICAPILLA*.

Hydrocichla ruficapilla (Temm.); Sharpe, Cat. Birds Brit. Mus., vii, p. 319 (1885).

Very common along the rocky streams on Kao Nawng.

"Iris chestnut, bill black, feet pale lilac flesh."

109. *HYDROCICHLA FRONTALIS*.

Hydrocichla frontalis (Blyth); Sharpe, Cat. Birds Brit. Mus., vii, p. 321 (1885); Robinson and Kloss, tom. cit., p. 64.

On Kao Nawng, but much rarer than the preceding.

110. CITTOCINCLA MACRURA.

Cittocincla tricolor (Vieill.); Sharpe, tom. cit., p. 85.

Cittocincla macrura (Gm.); Robinson and Kloss, tom. cit., p. 65.

Very common.

SYLVIIDÆ.

111. ORTHOTOMUS RUFICEPS.

Orthotomus ruficeps (Less.); Sharpe, Cat. Birds Brit. Mus., vii, p. 224 (1883); Robinson and Kloss, tom. cit., p. 66.

We obtained five specimens of this tailor-bird near Ban Kok Klap, this being the only place in the Peninsula, where we have found it at all abundant.

112. ORTHOTOMUS ATRIGULARIS.

Orthotomus atrigularis, Temm.; Sharpe, tom. cit., p. 220; Robinson and Kloss, tom. cit., p. 66.

An immature male from Kao Nawng.

LANIIDÆ.

113. HEMIPUS PICATUS.

Hemipus picatus (Sykes); Sharpe, Cat. Birds Brit. Mus., iii, p. 307 (1877); Robinson and Kloss, tom. cit., p. 69.

Four specimens from Kao Nawng and Ban Kok Klap.

114. TEPHRODORNIS GULARIS.

Tephrodornis gularis (Raffles); Sharpe, tom. cit., p. 278; Robinson and Kloss, tom. cit., p. 69.

A male from Kao Nawng and a female from Ban Kok Klap.

These specimens are typical *T. gularis* and Oates statement that the allied *T. pelvicus* extends southwards down the Malay Peninsula (Faun. Brit. Ind. Birds, i, p. 474) appears to have no foundation in fact.

115. PLATYSMURUS LEUCOPTERUS.

Platysmurus leucopterus (Temm.); Sharpe, tom. cit., p. 90; Robinson and Kloss, tom. cit., p. 71.

This noisy bird was very numerous in secondary jungle at Ban Kok Klap.

PARIDÆ.

116. MELANOCHLORA FLAVOCRISTATA.

Melanochlora flavocristata (Lafr.); Hellmayr, Tierreich, Paridæ, p. 31 (1903); Robinson and Kloss, tom. cit., p. 70.

Melanochlora sultanea (part.); Gadow, Cat. Birds Brit. Mus., viii, p. 6 (1883).

Fairly common on Kao Nawng and on the foot hills at the base of the mountain.

Four males were obtained.

"Iris hazel, bill black, feet bluish with a greenish cast."

SITTIDÆ.

117. DENDROPHILA SATURATION.

Sitta frontalis saturation, Hartert, Nov. Zool., ix, p. 573 (1902).

Dendrophila saturation, Robinson and Kloss, tom. cit., p. 70.

A single male, rather pale beneath, like others from Trang but probably referable to this form and not to *D. frontalis*.

118. PLATYLOPHUS ARDESIACUS.

Platylophus ardesiacus (Cab.); Sharpe, tom. cit., p. 278; Robinson and Kloss, p. 69.

Kao Nawng and Ban Kok Klap.

"Male, iris chestnut red, bill and feet black."

DICRURIDÆ.

119. DISSEMURUS PARADISEUS.

Dissemurus paradiseus (Linn.); Sharpe, tom. cit., p. 225; Robinson and Kloss, tom. cit., p. 71.

Common everywhere; the only drongo seen.

NECTARINIIDÆ.

120. ÆTHOPYGA SANGUINIPECTUS.

Æthopyga sanguinipectus, Wald., Gadow, Cat. Birds Brit. Mus., ix, p. 27 (1884).

Between the upper camp on Kao Nawng (3,050 feet) and the summit of the mountain (4,200 feet) our Dyak collectors obtained six males and a female of this very beautiful sunbird. The present locality is a very considerable extension of range for the species, which has not hitherto been obtained south of Muleyit mountain in Central Tenasserim. No other sunbirds of this genus were obtained though one species, *Æthopyga anomala*, allied to *Æ. saturata* of the eastern Himalayas and *Æ. wrayi* of the mountains of the southern Malay Peninsula has been described from the collections made by Dr. Abbott in the mountains of Trang but a little to the south of the present locality.

121. ARACHNOTHERA LONGIROSTRIS.

Arachnothera longirostris (Lath.); Gadow, tom. cit., p. 103; Robinson and Kloss, tom. cit., p. 77.

One female from Ban Kok Klap.

122. ARACHNOTHERA MODESTA.

Arachnothera modesta (Eyton); Gadow, tom. cit., p. 107; Robinson and Kloss, tom. cit., p. 77.

One female from 3,500 feet on Kao Nawng.

123. ARACHNOTHERA CHRYSOGENYS.

Arachnothera chrysogenys (Temm.); Gadow, tom. cit., p. 108; Robinson and Kloss, tom. cit., p. 77.

A male from the lower camp on Kao Nawng, about 1,200 feet. Nowhere common.

124. ANTHOTHREPTES HYPOGRAMMICA.

Anthothreptes hypogrammica (S. Müll.); Gadow, tom. cit., p. 112; Robinson and Kloss, tom. cit., p. 76.

A single much damaged specimen from Kao Nawng, where it was rare.

DICÆIDÆ.

125. DICÆUM TRIGONOSTIGMA.

Dicæum trigonostigma (Scop.); Sharpe, Cat. Birds Brit. Mus., x, p. 38; Robinson and Kloss, p. 78.

Common nearly everywhere.

126. PRIONOCHILUS MACULATUS.

Prionochilus maculatus (Temm.); Sharpe, tom. cit., p. 69; Robinson and Kloss, tom. cit., p. 32.

Two males from Kao Nawng.

"Iris dark, bill plumbeous, feet pale plumbeous.

ZOSTEROPIDÆ.

127. ZOSTEROPS TAHANENSIS.

Zosterops tahanensis, Ogilvie Grant; Bull. B.O.C., xix, p. 10 (1906); Robinson and Kloss, tom. cit., p. 79.

Three males from near the summit of Kao Nawng, agreeing well with other specimens from Trang and the mountains of Selangor.

34. RHIZOMYS SUMATRENSIS (RAFFLES).

Rhizomys erythrogenys, *Anderson, Proc. Asiat. Soc. Bengal*, p. 150 (1877).

2 ♂ imm. Ban Kok Klap, Bandon, N. E. Malay Peninsula. June, 1913.

Two immature specimens with the permanent molars just coming into place agree sufficiently well with the description of *R. erythrogenys*, Anderson, which is obviously founded on immature specimens of *R. sumatrensis* as stated by Blanford. The figure given by Anderson. (*Zool. Res. Yunnan*, pl. XIII) is much too bright with the upper surface bluish steel grey not iron grey as is actually the case.

35. TRAGULUS RAVUS, MILLER.

Miller, Proc. Biol. Soc. Washington, xv, p. 173 (1902).

1 ♀. Ban Kok Klap, Bandon, N. E. Malay Peninsula. June, 1913.

Head and body, 435; tail, 78; hind foot, 119; ear, 36.

Skull.—Greatest length, 92.5; greatest breadth, 41.6 mm.

THE ZOOLOGY OF KOH SAMUI AND KOH PENNAN.

I. INTRODUCTION.

By H. C. ROBINSON, C.M.Z.S., M.B.O.U., DIRECTOR OF MUSEUMS, F.M.S.

IN view of the interesting results yielded by the zoological exploration of the Tioman group of islands off the coast of Johore and Pahang on the eastern side of the Malay Peninsula, it was thought that a similar investigation of the islands lying off the Bight of Bandon in the north-east of the Malay Peninsula might prove equally profitable. With the permission of His Excellency the High Commissioner, Malay States, and the Chief Secretary, Federated Malay States, and provided with introductions from the Siamese authorities, an expedition was arranged by the Federated Malay States Museums in the early part of 1913 and large collections of mammals and birds and smaller ones of plants and reptiles were made on the islands.

The collections, though in some ways disappointing, are sufficiently interesting to merit description in detail, and full lists are given in the succeeding pages, which are prefaced by the following short account of the general character of the islands, which have been little visited by Europeans and are hardly, if at all, represented in the local literature.

Koh¹ Samui situated between the parallels of $9^{\circ} 22'$ and $9^{\circ} 34'$ N. and between longitude $99^{\circ} 56'$ and $100^{\circ} 07'$ E. is considerably the largest island on the east coast of the Malay Peninsula, being only approached in size by Pulau Tioman. It is situated well within the ten-fathom line and at its nearest, is distant from the mainland about nine miles, this distance being bridged over by a chain of several small islets.

The surface is very irregular, rising to a maximum elevation in the centre of the island of 2,200 feet, several other ranges exceeding 1,500 feet in height. These elevations are mainly disposed in long ridges, running roughly from S.E. to N.W., having large areas of flat or gently undulating land, between the hills, which are very steep.

On the east large areas are quite flat, having the appearance of recent elevation; near the coast they are sandy and devoted to the cultivation of coconuts, but further inland the soil is better and a considerable amount of swamp rice is grown. On the north, west and south, the ground is more broken and the hilly ground comes quite down to the coast. There are several streams of permanent water, some of considerable size, but in the dry season, which was the time of our visit, those on the eastern side were much diminished in crossing the sandy coastal plain, and potable water was scarce and poor in quality.

¹ Koh or Kaw (Siamese) = Island.

The hill sides, to a very considerable height, have been much denuded of their original timber, little control being exercised over the local population, which annually destroys much jungle for the plantations of hill rice, which, when abandoned, are overgrown with a worthless secondary growth of bamboo and thorny shrubs.

The population is large, and was said by the local magistrate to exceed 8,000 people, who subsist by the growth of rice and fruit, large quantities of coconuts being exported to Bangkok, and fruit, principally arecanuts and mangoes, to Bandon. Many pigs are reared by the local population but little fishing is done and the island afford but few supplies to the European visitor, even bananas and fowls being scarce and hard to obtain. On the north coast a small lode of wolfram ore has of late years been worked but has not proved commercially successful. The coasts of the island seems to be formed of schists, gneisses and other metamorphic rocks, but the central core and the taller hills are granite.

Koh Pennan,¹ situated to the north of Koh Samui, separated from it by a channel about eight miles wide carrying a maximum depth of nine fathoms, is considerably smaller than the latter island, being roughly elliptical in shape with a long diameter of about ten miles and a short one of about six. It rises to about the same height, but the surface, generally speaking, is more rugged and there is not nearly the same proportion of flat land, except on the south coast. The population is considerably smaller but a large amount of copra and coconuts are produced, which are shipped to Bangkok. As in Koh Samui, the population is almost exclusively Siamese, though there are a certain number of trading Chinamen from Bangkok and the adjacent mainland. Malay is not spoken or understood on either island and we had great difficulty in obtaining an interpreter who knew even a few words of the language.

We collected at three localities on Koh Samui, at:

- (1) Klong Pah Yie towards the northern end of the west coast where we stayed from May 6th to May 13th, the surrounding country being mainly coconuts, rice fields, grazing ground or secondary jungle;
- (2) On the headwaters of a stream rising in the centre of the island, in the middle of the only considerable area of virgin jungle, on the island, where we built a camp and collected from May 15th to May 17th; and
- (3) On a bay near the N.E. coast which proved singularly uninteresting and unhealthy and at which we only stopped from May 18th to May 23rd.

On Koh Pennan we had one station only, near the S.W. corner of the island, where we established ourselves in a comfortable tin-roofed "sala" built by a pious Siamese, staying from May 24th to June 1st when we set sail for the mainland of Bandon which we reached after a rather irksome journey of three days.

¹ Known also as Pungun and Pungunn.

II. MAMMALS.

By H. C. ROBINSON, C.M.Z.S., AND C. BODEN KLOSS, F.Z.S.

The mammalian fauna of Koh Samui and Koh Pennan proved disappointing and the islands are noteworthy rather for the species that are not represented than for those that do actually occur.

It may safely be asserted that they have derived their fauna from those districts of the Peninsula immediately adjacent: for instance the only squirrels present are forms of the continental *Sc. concolor* and a species of Giant squirrel closely related to the mainland form, *R.m. peninsulae*. No *Rhinosciurus* is known nor are races of *Sciurus tenuis*, *Sciurus vittatus* or *Sc. nigrovittatus*. Flying squirrels, a characteristic feature of the fauna of many of the local islands, may definitely be stated to be absent, and the same is the case with two other characteristic flying mammals—viz., *Galeopterus* and bats of the *spectrum* section of *Pteropus*, which are known from almost every other island of the China Sea. Indeed for some obscure reason bats of all species were practically absent and, with the exception of the universally distributed *Cynopterus*, only one other individual, probably an *Emballonura*, was even seen. Wild pigs were reported on both islands but they were almost certainly only feral specimens of the local Siamo-Chinese breed.

Leaf-monkeys occurred on Koh Samui but have now been eaten out. The Kra (*Macaca irus*) was found on both islands but was rare and shy, while *M. nemestrina* is stated on native authority to be found on Koh Pennan. Captive specimens were seen but their provenance was uncertain and they had not improbably been brought from the adjacent mainland.

Mouse-deer were absent from both islands; barking-deer occur on Koh Samui (not on Koh Pennan) but are assiduously shot by the native population; an immature specimen was obtained by us, but affording no differential characters, was not preserved.

Otters were common and the duyong is occasionally found in shallow bays on the western side of Koh Samui.

1. PRESBYTIS OBSCURA HALONIFER, CANTOR.

3 ♂, 2 ♀, 3 ♂ immature.

No monkeys of this genus occur on Koh Samui, though they were comparatively common but very wild on Koh Pennan.

The series of five adults differ considerably *inter se*. Two old females in somewhat worn pelage have the pileum strongly tinged with yellowish, a marked median bronzy line on the back, and a pale yellowish-white area at the base of the thighs. The males are darker and greyer, the yellowish tinge is absent from the cap and the bronzy median line is practically absent in two specimens though just visible in the third.

Species.	Locality.	S. M. No.	Sex.	Head and body.		Tail.	Hind foot.	Greatest length of skull.	Condyle-basilar length.	Zygomatic breadth.	Maxillary toothrow.
<i>Epimys rattus jalorensis</i>	Koh Samui ...	381/13	♀	174	195	34		43.9	37.6	20.4	7.6
"	"	383/13	♂	170	200	34		43.0	37.0	19.5	7.5
"	"	446/13	♀	161	178	32		41.9	35.8	20.5	7.5
"	"	456/13	♂	174	201	35		43.4	38.0	21.5	7.6
"	"	458/13	♂	189	190	33.5		44.0	37.6	21.0	7.1
"	"	465/13	♀	169	191	31.5		40.8	36.0	20.6	7.5
"	"	467/13	♂	163	176	32		42.0	36.2	20.0	7.5
"	"	502/13	♀	157	182	33		41.0	35.2	19.4	7.2
"	"	506/13	♀	172	195	32		42.5	37.0	20.0	7.3
"	"	97/14	♂	177	186	34		43.2	36.6	19.1	7.1
"	Koh Pennan...	188/13	♂	180	196	35		42.0	36.8	20.0	7.3
"	"	189/13	♂	182	184	34		43.0	36.8	20.3	7.1
"	"	194/13	♂	172	180	35		40.1	35.4	18.4	7.0
"	"	196/13	♀	168	194	33		40.8	35.7	19.0	7.0
"	"	302/13	♂	169	174	33		40.5	35.4	19.2	6.9
"	"	305/13	♂	171	171	32.5		40.0	35.5	20.0	7.4
"	"	306/13	♂	171	186	32		42.0	36.3	20.1	6.9
"	"	307/13	♀	169	189	33		42.6	36.0	20.5	7.8
"	"	314/13	♂	170	182	32.5		—	38.2	20.8	7.7
"	"	318/13	♂	192	190	34		41.8	—	20.8	7.7
"	"	319/13	♂	166	176	33.5		40.6	35.8	20.4	7.2
"	"	93/14	♂	193	209	35		44.8	38.0	21.0	7.0

III. BIRDS.

By H. C. ROBINSON, C.M.Z.S., M.B.O.U.

The main object of our visit to the group was the acquisition of large series of the local mammals and we did not therefore attempt to collect many individual specimens of birds, though an example of every species seen was, if possible, obtained.

As is the case with all the islands off the east coast of the Malay Peninsula the ornithology presents few features of interest and after allowing for varying circumstances, such as the degree of deafforestation, and the existence or otherwise of paddy land, is identical in all the islands. In all, certain birds such as *Cittocincla macrura*, *Eulabes* sp. and *Calornis chalybea* are very common while certain groups such as the Woodpeckers, Barbets, Trogons and Timeliids are either rare or entirely absent. The present islands differ from Pulau Tioman and Tinggi further south in possessing two species of game bird, *Turnix taigour* and *Gallus gallus*; but the latter, of which we did not obtain specimens, has possibly merely been introduced by the Siamese population the local domestic breed being extraordinarily close to the wild bird. Hornbills, *Dichoceros bicornis*, also were common on the hills, but these as well as *Alcedo meninting* and *Accipiter gularis* were only noted though they were seen more than once. The

common fishing owl *Ketupa javanensis* was seen on the rice-fields and the note of a *Scops*, probably *Sc. lempiji*, heard in the jungle on the hills. As on every other island on these coasts, birds, in the old jungle, were extraordinarily scarce both in species and in individuals, the only ones at all common being, *Cittocincla macrura*, *Eudynamis honorata*, *Micropus melanocephalus* and *Cyornis sumatrensis*. In the secondary jungle *Pellorneum subochraceum* and *Turdinus olivaceus* were not infrequent, while, in the open country and among the coconut groves, *Pycnonotus finlaysoni*, *Calornis chalybea*, *Eulabes intermedia* and the two bee-eaters were the dominant forms. All the sunbirds (with the exception of *N. malaccensis*) the flower pecker, *Dicæum cruentatum* and *Micornis gularis* were confined to a narrow littoral belt. The rice-field birds were those common in similar situations all over the Malay Peninsula.

The Black and White Imperial Pigeon (*Myristicivora bicolor*) which swarms on the southern islands at about the same time of year was not met with, though it possibly occurs, while the existence of the Finfoot *Heliornis personata* on Koh Pennan is a very surprising fact. The cormorant, which was common, is hardly known further south.

Two species not hitherto met with within the limits of the Malay Peninsula—viz., *Collocalia merguiensis* and *Acrocephalus bistrigiceps* were secured, the former being extraordinarily abundant, breeding in great numbers on caves and hollows in the chain of small rocky islands between the larger islands and the mainland.

TURNICIDÆ.

1. TURNIX TAIGOOR.

Turnix taigoor (Sykes); Ogilvie Grant, Cat. Birds Brit. Mus., xxii, p. 530 (1894).

Fairly common on both islands among the *lalang*.

PHASANIDÆ.

GALLUS GALLUS.

antea, p. 87.

Jungle cock were heard on the west side of Koh Samui but none were obtained.

TRERONIDÆ.

2. TRERON NIPALENSIS.

Treron nipalensis (Hodgs.); Salvadori, Cat. Birds Brit. Mus., xxi, p. 34; Robinson and Kloss, Ibis., 1910, p. 674.

The Thick-billed Pigeon was very common on Koh Samui.

3. OSMOTRERON VERNANS.

antea, p. 88.

Fairly common on both islands but not nearly so numerous as on the Tioman group, further south.

A hard set egg was secured on Koh Pennan on May 27th. The nest consisted of a few loosely woven twigs placed in a small bush about five feet off the ground.

CARPOPHAGA ÆNEA.

Carpophaga ænea (Linn.); Salvad., tom. cit., p. 190.

The Bronze Imperial Pigeon was numerous on both islands; specimens were shot but not preserved.

COLUMBIDÆ.

4. TURTUR TIGRINUS.

antea, p. 88.

Exceedingly abundant on both islands. We preserved a male from Koh Pennan.

5. CHALCOPHAPS INDICA.

antea, p. 88.

Fairly common in the jungle on both islands. We obtained two males on Koh Samui.

RALLIDÆ.

6. LIMNOBÆNUS FUSCUS.

Limnobænus fuscus (Linn.); Sharpe, Cat. Birds Brit. Mus., xxiii, p. 146 (1894).

One male from Koh Samui.

"Iris and orbits red, bill bluish green, legs pale coral, claws black."

7. AMAUORNIS PHÆNICURA CHINENSIS (Bodd).

Amauornis phænicura chinensis (Bodd.), Stresemann Nov. Zool., vol. xx, p. 304 (1913).

Amauornis phænicura (Forst.); Sharpe, tom. cit., p. 156; Robinson and Kloss, Ibis., 1911, p. 11.

Fairly common on Koh Samui; not noted on Koh Pennan.

"Iris chocolate, bill greenish yellow, orange on culmen, feet wax yellow"; wing 156, 154.

These specimens confirm Stresemann's diagnosis having the upper surface olive (less grey) and the rump strongly washed with bronze.

HELIORNITHIDÆ.

8. HELIOPAIS PERSONATA.

Heliopais personata (G.R.Gr.); Sharpe, tom. cit., p. 232; Bonhote, P.Z.S. 1901 (i), p. 79.

The Masked Finfoot is widely distributed throughout the Malay Peninsula in very varied situations from sluggish mangrove creeks to rapid mountain streams but is nowhere common. One of our Dyaks obtained a fine male specimen in full plumage on a small stream on Koh Pennan.

"Iris dark hazel, feet apple green with a tinge of blue, edges of lobes and soles yellowish, lobes black beneath. Bill chrome yellow, yellowish green on culmen, basal culminal process chrome yellow."

LARIDÆ.

9. STERNA DOUGALLI.

Sterna dougalli, Mont.; Howard Saunders, Cat. Birds Brit. Mus., xxv, p. 70 (1896); Robinson, Journ. Fed. Malay States Mus., ii, p. 9 (1906).

Terns were very common in the Strait between Koh Samui and Koh Pennan but generally kept far out to sea among the reefs. On a small island off Koh Pennan we obtained two beautiful specimens in full breeding plumage with the roseate tint of the under surface strongly developed and the streamers of the tail elongated. They were feeding amongst large numbers of the succeeding species. The only other specimens obtained within the limits of the Malay Peninsula are three shot in August on Pulau Jemor, a small island in the middle of the Straits of Malacca off the Selangor Coast.

10. STERNA MELANAUCHEN.

Sterna melanauchen, Temm.; Howard Saunders, tom. cit., p. 126; Robinson, Journ. Fed. Malay States Mus., v, p. 18 (1913).

Koh Pennan. In full breeding plumage at the end of May.

Very common along the whole of the east coast of the Malay Peninsula.

CHARADRIIDÆ.

11. SARCOGRAMMUS ATRINUCHALIS.

antea, p. 88.

Common on both islands on the rice-fields and open spaces.

"Iris brown, eye lappet and terminal half of bill carmine, lip of bill black, tarsi pale whitish yellow, feet greenish yellow."

12. OCHTHODROMUS PYRRHOTHORAX.

Ochthodromus pyrrhоторax (Gould); Sharpe, tom. cit., p. 226; Robinson and Kloss, tom. cit., p. 12.

A male shot on Koh Pennan on June 1st, shows no signs of assuming breeding plumage.

13. ÆGIALITIS ALEXANDRINA.

Aegialitis alexandrina (Linn.); Sharpe, tom. cit., p. 275.

Very common on the sandy beaches of both islands and evidently about to breed though we did not obtain eggs or young.

14. DISSURA EPISCOPUS.

antea, p. 88.

Very common on Koh Samui.

"Male, iris, inner ring red, outer yellow, legs dirty claret red, bill base black, remainder maroon red, orbital skin black, rest of bare skin on head slatey, skin under wings scarlet orange."

ARDEIDÆ.

15. ARDEA SUMATRANA.

Ardea sumatrana (Raffles); Sharpe, Cat. Birds Brit. Mus., xxvi, p. 68 (1898); Robinson and Kloss, tom. cit., p. 14.

An adult female from Koh Pennan.

"Iris bright yellow, orbital skin greenish chrome, legs brownish, joints tinged with green, soles whitish yellow, bill black, lower mandible yellow at tip shading into white, chrome at base."

16. DEMIEGRETTE SACRA.

Demiegretta sacra (Gm.); Sharpe, tom. cit., p. 137; Robinson and Kloss, tom. cit., p. 15.

One from Koh Samui and another from Koh Pennan. The latter is in the grey phase and the former in the white, with a few dark feathers on the back and mantle and the tips of the greater wing coverts grey.

"Iris pale chrome, orbital skin greenish, tarsi and feet yellowish green, the soles orange, upper mandible greenish, the lower yellow."

17. ARDEOLA BACCHUS.

Ardeola bacchus (Bp.); Sharpe, tom. cit., p. 211; Robinson and Kloss, tom. cit., p. 15.

A female from Koh Samui is moulting into the breeding plumage and the new feathers on the crown and neck are bright chestnut. The dimensions however are small the wing being only 8.1 and the tarsus. 2.2. which agree with those of *A. grayi*. which also occur in the Peninsula.

"Iris lemon yellow, bill and orbital skin greenish yellow, tip of bill black, tarsi greenish yellow, feet deeper yellow."

18. ARDETTA SINENSIS.

Ardetta sinensis (Gm.); Sharpe, tom. cit., p. 227.

An adult male from Koh Pennan.

"Iris bright yellow, orbital skin and lores greenish yellow, bill yellowish white, the culmen brownish horn, tarsi and toes, chrome, with a slight greenish cast."

ANATIDÆ.

19. DENDROCYNNA JAVANICA.

antea, p. 89.

There were a few Whistling Teal on the rice-fields at Koh Samui.

"Male, iris hazel, orbital skin yellowish green, bill and feet dark slatey."

PHALACROCORACIDÆ.

20. PHALACROCORAX CARBO.

Phalacrocorax carbo (Linn.); Ogilvie Grant, Cat. Birds Brit. Mus., xxvi, p. 340 (1898).

A male in non-breeding plumage was obtained at Koh Pennan.

"Iris emerald, gular skin chrome, feet black, bill blackish, the culmen yellowish."

Though very rare in the south of the Peninsula Cormorants become much more abundant in the north; I have obtained it on the coast of Patani and we saw four specimens in Senggora Roads on our way

to Koh Samui. Tropical specimens are said to be smaller than those from northern seas. The one before us has the wing about 13.5 and the culmen 2.6 inches.

FALCONIDÆ.

21. SPIZÆTUS LIMNAETUS.

Spizaetus limnaetus (Horsf.); Sharpe, Cat. Birds Brit. Mus., i, p. 272 (1874); Robinson and Kloss, tom. cit., p. 23.

Two females from Koh Pennan, one in the ordinary and the other in the melanotic phase.

22. SPILORNIS PALLIDUS.

antea, p. 90.

Rather more richly coloured than the specimen from the mainland.

"Female, iris bright yellow, bill and feet greenish lead, cere yellowish."

23. HALIASTUR INTERMEDIUS.

Haliastur intermedius Gurney; Sharpe, tom. cit., p. 314; Robinson and Kloss, tom. cit., p. 24.

The local form of the Braminy Kite is common everywhere along the sea coast and for some distance inland in open country.

24. HALIAETUS LEUCOGASTER.

Haliaetus leucogaster (Gm.); Sharpe, tom. cit., p. 307; Robinson and Kloss, tom. cit., 0.23.

Two adults and an immature bird were obtained on Koh Samui and Koh Pennan on both of which islands it was very common.

The immature specimen is in a somewhat peculiar stage of plumage resembling birds from Langkawi which we have, as I am now inclined to think incorrectly, referred to *H. leucocoryphus* (Robinson and Kloss, tom. cit., p. 24).

PANDIONIDÆ.

25. POLIOÆTUS ICHTHYÆTUS.

Polioætus ichthyætus (Horsf.); Sharpe, tom. cit., p. 452; Robinson and Kloss, tom. cit., p. 30.

An adult male from Koh Pennan.

CORACIIDÆ.

26. EURYSTOMUS ORIENTALIS.

Eurystomus orientalis (Linn.); Sharpe, Cat. Birds Brit. Mus., xvii, p. 33, pl. ii, fig. i (1892); Robinson and Kloss, Ibis., 1911, p. 32. Stresemann, Nov. Zool., xx, pp. 298-301 (1913).

A male and two females from Koh Samui and Koh Pennan belonging to the black-tailed form and therefore nearer to the true *E. orientalis* than to its subspecies. *E. orientalis calonyx* (c. f. Stresemann, loc. cit. supra).

"Male, bill and feet coral, tip of bill and claws brownish black, orbital skin brownish red, iris dark hazel."

UPUPIDÆ.

27. UPUPA INDICA.

Upupa indica, Reichenb.; Salvin, Cat. Birds Brit. Mus., xvi, p. 10 (1892); Robinson and Kloss, tom. cit., p. 35.

Very common on Koh Samui but at the time of our visit in shockingly ragged and disreputable plumage.

"Male, iris hazel, bill black, pinkish at base, feet greyish, soles pinkish."

ALCEDINIDÆ.

28. PELARGOPSIS MALACCENSIS.

Pelargopsis malaccensis, Sharpe, Cat. Birds Brit. Mus., xvii, p. 103 (1892).

Rhamphalcyon capensis malaccensis, Oberholser, Proc. U. S. Nat. Mus., xxxv, p. 678 (1909).

Judging from Oberholser's (*loc. cit.*) monograph of the genus a male and two females from Koh Pennan would appear to belong to this race and not as might be expected to the more northern form *P. burmanica*, Sharpe.

All have a distinct brown pileum, though in one female, owing to abrasion of the feathers it is very much lighter than the others. The wing of the male measures 146 mm. and of the two females 146 and 145. The specimens are exactly matched by others from more southern localities.

"Female, iris dark hazel, bill dark coral red, more vermilion towards gape, dark maroon at tip, tarsi and feet vermilion, claws brownish horn."

29. HALCYON SMYRNENSIS.

antea, p. 92.

Common on both islands.

30. HALCYON ARMSTRONGI.

Halcyon armstrongi, Sharpe, tom. cit., p. 277, pl. vii, fig. 1; Robinson and Kloss, tom. cit., p. 34.

Halcyon humii, Sharpe, tom. cit. p. 281, pl., viii.

After again examining over fifty specimens of this Blue and White Kingfisher from all parts of the Malay Peninsula, including eleven from Koh Samui and Koh Pennan I am convinced that it is impossible to maintain the distinctness of the northern form from the southern bird. The characters relied on by Dr. Sharpe are met with indifferently in specimens from the same locality and I do not think that the explanation put forward—viz., that in the south of the Peninsula the duller greener bird (*H. armstrongi*) is migratory, while the brighter form (*H. humii*) is resident can be supported by facts.

"Female, iris dark hazel, bill black, base of lower mandible pinkish, feet greyish brown."

MEROPIDÆ.

31. MEROPS SUMATRANUS.

antea, p. 92.

32. MEROPS PHILIPPINUS.

antea, p. 92.

Both Bee-eaters were common on Koh Samui, less so on Koh Pennan.

CYPSELIDÆ.

33. TACHORNIS INFUMATA.

Tachornis infumata (Sclat.); Hartert, Cat. Birds Brit. Mus., xvi, p. 467 (1892); Robinson and Kloss, tom. cit., p. 38.

This little palm swift was very abundant after rain on both islands, but only one female was shot.

34. CYPSELUS PACIFICUS.

Micropus pacificus (Lath.); Hartert, tom. cit., p. 448.

Three from Koh Pennan.

35. COLLOCALIA MERGUIENSIS.

Collocalia francica, subsp. *merguiensis*, Hartert, tom. cit., p. 453.

Very common indeed on both islands breeding on some of the small islands between Koh Samui and the mainland, the nests being regularly collected by the Chinese. This race has not hitherto been recorded from the Malay Peninsula, the form occurring on the islands to the south being *C. f. inexpectata*, Hume.

CUCULIDÆ.

36. CACOMANTIS MERULINUS.

Cacomantis merulinus (Scop.); Shelley, tom. cit., p. 40; Robinson and Kloss, tom. cit. p. 40.

A single very immature specimen of undetermined sex from Koh Samui.

37. EUDYNAMIS ORIENTALIS.

Eudynamis orientalis (Linn.); Shelley, Cat. Birds Brit. Mus., xix, p. 322 (1891); Robinson and Kloss, tom. cit., p. 41.

Very common on both islands as on practically every other island of any size in the vicinity of the Malay Peninsula, though commoner in the winter months.

"Male, iris crimson, bill greenish slate, feet slaty, edges of scales yellowish."

38. CENTROPUS SINENSIS INTERMEDIUS.

antea, p. 93.

Five specimens from the islands agree with those from the mainland in the characters noted. The shortness and breadth of the tail is especially noticeable.

39. RHOPODYTES TRISTIS.

antea, p. 93.

Very common in secondary jungle on Koh Samui.

PICIDÆ.

40. CHRYSOCOLAPTES GUTTICRISTATUS.

Chrysocolaptes gutticristatus (Tick.); Hargitt, tom. cit., p. 448; Robinson and Kloss.

A male from Koh Samui. Fairly common in the interior of the islands especially on the *pinang* palms (*Areca catechu*).

41. IYNGIPICUS CANICAPILLUS.

Iyngipicus canicapillus (Blyth); Hargitt, Cat. Birds Brit. Mus., xviii, p. 322 (1890); Robinson and Kloss, tom. cit., p. 46; Robinson, Journ. Fed. Malay States Mus., v, p. 20 (1913).

Iyngipicus pumilus, Hargitt, tom. cit., p. 321.

Of two males obtained on Koh Samui in May, one has the central rectrices entirely uniform, while the other has them spotted on both webs. The wing of both specimens is about 3.2 in. (80 mm.). I think therefore that *I. pumilus* whose range is overlapped both north and south by *I. canicapillus* has no claim even to sub-specific distinction.

PITTIDÆ.

42. PITTA CYANOPTERA.

antea, p. 97.

One female from Koh Samui.

"Iris dark hazel, bill black, feet flesh."

MUSCICAPIDÆ.

43. CYORNIS SUMATRENSIS.

Siphia sumatrensis, Sharpe, tom. cit., p. 451.

Cyornis sumatrensis, Hartert, Nov. Zool., ix, p. 550 (1902); Robinson and Kloss, tom. cit., p. 51.

After a good deal of hesitation I have referred a large number of specimens obtained in both islands to this race, which does not seem very markedly differentiated from *C. tickellæ* of Peninsular India and Burma, from which it is distinguished only by its slightly smaller size, and whiter abdomen, sharply defined from the rufous orange of the breast.

"Female, iris dark hazel, bill black, feet bluish flesh."

Mr. Seimund obtained a nest on Koh Pennan on May 25th and shot the parent bird. The nest was placed in a crevice in a rock about six feet off the ground and is of the usual flycatcher type, a hemispherical cup about four inches in external and two in internal diameter, made of dead leaves and fragments of fern and lined with tendrils. The eggs were three in number and hard set. In shape they are blunt ovals and the shell is almost without gloss. The ground colour is olive grey clouded with mottlings of reddish brown which in two eggs is fairly evenly distributed over the shell and in third forms a zone at the larger end. The measurements are A 172×13.6 ; B 178×13.3 ; C 178×13.5 mm.

44. HYPOTHYMIS AZUREA.

antea, p. 99.

A male from each island ; not common.

" Iris carmine, bill and feet slatey black."

45. MUSCITREA GRISOLA.

Pachycephala grisola (Blyth.) Gadow, Cat. Birds Brit. Mus., viii, p. 220.

Hyloterpe grisola (Blyth) ; Sharpe, Hand-list Birds, iv, p. 312 (1903).

Muscitrea cinerea, Blyth, Journ. Asiat. Soc. Bengal, xvi, p. 122 (1847) ; Sharpe, Hand-list Birds, iii, p. 220 (1901).

Muscitrea grisola, Oates, Faun. Brit. Ind. Birds, ii, p. 30 (1890) ; Robinson and Kloss, tom. cit., p. 54.

This species was fairly common in a small patch of mangrove on the west side of Koh Samui and five specimens, one with the secondaries and inner primaries, earthy brown on the outer webs, were secured. The species is numerous along the coastal zone on both sides of the Malay Peninsula and on several of the islands, but is not met with inland. It appears to keep strictly to the mangroves.

46. TERPSIPHONE AFFINIS.

antea, p. 99.

Two males from Koh Samui.

" Iris emerald, feet lead grey, bill and eye wattle smalt blue, inside of mouth sage green."

CAMPOPHAGIDÆ.

47. CAMPOPHAGA NEGLECTA.

antea, p. 101.

A pair from Koh Samui.

" Iris dark hazel, bill and feet blackish.

PYCNONOTIDÆ.

48. ÆGITHINA TIPHIA.

antea, p. 101.

The Common Iora was fairly numerous on both islands.

49. IRENA PUELLA.

antea, p. 102.

Common on the hills of Koh Samui in the patches of old jungle.

50. MICROPUS MELANOCEPHALUS.

Microtarsus melanocephalus (Gm.) ; Sharpe, tom. cit., p. 65.

Micropus melanocephalus, Robinson and Kloss, tom. cit., p. 57.

One of the few birds that was at all numerous in the patches of heavy jungle on the hills of Koh Samui.

51. PYCNONOTUS ANALIS.

Pycnonotus analis (Horsf.); Sharpe, tom. cit., p. 140; Robinson and Kloss, tom. cit., p. 57.

By no means common. One male was obtained on Koh Samui.

"Iris hazel, bill slatey black, feet greenish black."

52. PYCNONOTUS FINLAYSONI.

Pycnonotus finlaysoni (Strickl.); Sharpe, tom. cit., p. 144; Robinson and Kloss, tom. cit., p. 58.

Fairly common both on Koh Samui and Koh Pennan.

53. PELLORNEUM SUBOCHRACEUM.

antea, p. 103.

One of the commonest birds on Koh Samui; not shot on Koh Pennan, though it doubtless occurs there.

"Male, iris chestnut, bill horn, feet flesh."

54. TURDINUS OLIVACEUS.

antea, p. 103.

One of the few Babblers found on the coastal islands; fairly numerous on Koh Samui.

"Female, iris red-brown, bill greenish lead, feet brownish flesh."

55. MIXORNIS GULARIS, > RUBRICAPILLUS.

antea, p. 106.

Five specimens from Koh Samui and Koh Pennan agree with those from the Bandon mainland in not being typical *M. gularis* but intermediate between that form and *M. rubricapilla*. Two of these specimens are however nearer to the latter race having the streaks on the throat confined to the shafts of the feathers, the crown rusty ferruginous, not chestnut, the outer aspect of the wings olivaceous and the yellow supercilium very distinct. (c.f. *Hume, Stray. Feath.* vi, p. 266, 267 (1878). As in so many other cases we are at the meeting place of two local races and the individual characters have become very plastic.

The two specimens above noted have the soft parts recorded as follows: "Male, iris light hazel, bill lead, yellowish at edges, tarsi and feet greenish lead, yellowish on soles. Female, iris wax yellow, bill dark horn above, yellowish green below, the tomia and edges yellow, skin at gape, wax yellow, feet greenish yellow, more yellow on soles."

TURDIDÆ.

56. LARVIVORA CYANEA.

Erithacus cyaneus (Pall.) Seebohm, Cat. Birds Brit. Mus., v, p. 303; Robinson and Kloss, tom. cit., p. 64.

A nearly adult male was procured in dense jungle on the hills of Koh Samui on May 16th, showing that the species is probably resident.

"Bill black, livid flesh at base, feet pale flesh."

57. COPSYCHUS MUSICUS.

Copsychus musicus (Raffles); Robinson and Kloss, tom. cit. p. 65.

Copsychus saularis (partim); Sharpe, tom. cit., p. 61.

Not so numerous as further south.

58. CITTOCINCLA MACRURA.

antea, p. 108.

One of the commonest birds, especially in the jungle among rocks.

"Male, iris chestnut, feet pale flesh, bill black."

SYLVIIDÆ.

59. ORTHOTOMUS ATRIGULARIS.

antea, p. 108.

Common on both islands.

60. ACROCEPHALUS BISTRIGICEPS.

Acrocephalus bistrigiceps, Swinh.; Seebohm, tom. cit., p. 51.

Two female specimens were shot on Koh Pennan among high grass by one of the Dyaks on May 29th and 30th.

The species is new to the Malay Peninsula and the present locality is a considerable extension of its range, which has not hitherto been known to extend south of Tavoy in Central Tenasserim.

61. PHYLLOSCOPUS BOREALIS.

Phylloscopus borealis (Blas.); Seebohm, Cat. Birds Brit. Mus., v, p. 40 (1881); Robinson and Kloss, tom. cit., p. 65.

A female from the hills of Koh Samui dated May 15th, and a male from Koh Pennan, shot on May 30th. In both these specimens the pale wing bars formed by the light tips to the coverts are almost entirely lacking.

CORVIDÆ.

62. CORVUS MACRORHYNCHUS.

Corone macrorhynchus (Wagl.); Sharpe, Cat. Birds Brit. Mus., iii, p. 38 (1877).

Corvus macrorhynchus, Robinson and Kloss, tom. cit., p. 71.

The jungle crow was very common both on the islands and on the mainland; one was shot on Koh Samui to make certain of the identification.

DICRURIDÆ.

63. DISSEMURUS PARADISEUS.

antea, p. 109.

Common on the islands.

STURNIDÆ.

64. EULABES INTERMEDIUS.

Mainatus intermedius (A. Hay); Sharpe, Cat. Birds Brit. Mus., xiii, p. 66; Robinson and Kloss, tom. cit., p. 67.

Gracula javana intermedia, Stresemann, Nov. Zool., xix, p. 314 (1912).

This Mynah was very common on both Koh Samui and Koh Pennan and we obtain five specimens. All are to be referred to the

present race, which is only a subspecies of *E. javanensis*. The shape of the postocular patch of feathers varies and is in some specimens practically united to the feathers of the throat. Better characters for the discrimination of the race from the typical form are the smaller size and the more slender bill, the latter feature being especially well marked. The wings of four specimens range from 176-168 mm. while that of a skin from Trang is 162. A male *E. javanensis*, from Pulau Aor measures 186 mm.

“Male, iris dark hazel, bill orange-yellow at tip, feet and lappets cadmium yellow, the latter apple green beneath eye.”

65. CALORNIS CHALYBEA.

Calornis chalybea (Horsf.) ; Sharpe, tom. cit., p. 143 ; Robinson and Kloss, tom. cit., p. 68.

Common everywhere.

66. ANTHUS MALAYENSIS.

Anthus malayensis, Eyton, P.Z.S. 1839, p. 104 ; Robinson and Kloss, tom. cit., p. 74.

Anthus rufulus (partim) Sharpe, Cat. Birds Brit. Mus., p. 574 (1885).

Common on the rice-fields of both islands. The specimens obtained are in extremely worn plumage but are almost certainly this form.

“Male, iris dark hazel, bill yellowish horn, feet pinkish flesh.”

PLOCEIDÆ.

67. MUNIA ACUTICAUDA.

Uroloncha acuticauda (Hodgs.) ; Sharpe, Cat. Birds Brit. Mus., xiii, p. 356 (1885).

Very common amongst the lalang and on the rice-stubbles of both islands and also on the mainland.

“Male, iris chestnut, bill lead, lower mandible paler, feet lead black.”

NECTARINIIDÆ.

68. ÆTHOPYGA CARA.

Aethopyga cara, Hume, *Stray Feath.*, ii, p. 473 (note) (1874).

Aethopyga siparaja (Raffles) (partim) ; Robinson and Kloss, tom. cit., p. 74.

This form which extends up the Burmese Coast to Pegu is only a race of the Malayan *Ae. siparaja* which occurs in the southern half of the Peninsula, Borneo, Java and Sumatra. The differences between the two forms are slight but the northern form (*Ae. cara*) always has the upper tail coverts greenish not violet, the yellow rump patch more lemon (less orange) the yellow bases to the scarlet feathers of the throat and breast less pronounced and the crown metallic greenish not violet. As Hume points out true *Ae. siparaja* has the

violet moustachial streak bordered below with black which is not the case with *Ae. cara*. The receipt of additional specimens enables me to state that the bird met with in Penang is *Ae. siparaja*, while that from Langkawi, Trang and Koh Samui is *Ae. cara*, the birds found in the Butang Archipelago are in intermediate.

Two male specimens were obtained on Koh Samui, where it was not very abundant.

"Iris dark hazel, bill black, lower mandible brownish, feet brownish black, soles whitish."

69. CYRTOSTOMUS FLAMMAXILLARIS.

Cinnyris flammaxillaris (Blyth); Gadow, tom. cit., p. 77.

Cyrtostomus flammaxillaris, Robinson and Kloss, tom. cit., p. 77.

Common among flowering shrubs on the shores of both islands.

"Male, iris hazel, bill and feet blackish, soles greenish yellow."

70. LEPTOCOMA HASSELTII.

Cinnyris hasselti (Temm.); Gadow, tom. cit., p. 67; Robinson and Kloss, tom. cit., p. 77.

One male from Koh Pennan.

71. ANTHOTHREPTES MALACCENSIS.

Anthothreptes malaccensis (Scop.); Gadow, Cat. Birds Brit. Mus., ix, p. 122 (1884); Robinson and Kloss, tom. cit., p. 76.

Everywhere, where there were coconut trees.

DICÆIDÆ.

72. DICÆUM CRUENTATUM.

Dicæum cruentatum (Linn.); Sharpe, Cat. Birds Brit. Mus., x, p. 15 (1885); Robinson and Kloss, tom. cit., p. 78.

Common on the coast of both islands.

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FROM THE

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INCLUDING THE ADJACENT ISLANDS.

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BY

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LIST OF A SMALL COLLECTION OF MAMMALS AND
BIRDS FROM THE KRAU RIVER, WESTERN
PAHANG.

BY HERBERT C. ROBINSON AND C. BODEN KLOSS.

IN October, 1913, a small collecting party was despatched to Eastern Pahang with instructions to search for the rare Argus Pheasant *Rheinwartius ocellatus nigrescens*, Hartert, which was originally obtained on the Benom massif by Waterstradt's Dyak collectors and was subsequently found to be not uncommon on the lower slopes of Gunong Tahan.

Owing however to bad weather and the impossibility of obtaining transport our party only ascended the Krau river for a couple of days in boats and the collections, therefore, only represent the fauna of the outer and lower foot-hills.

A few of the species obtained are, however, local and rare, and the list is therefore given in full.

The reference cited is to a previous paper by Kloss in this Journal on the Mammals and Birds of Pahang. (Vol. iv, pp. 152-166.)

MAMMALS.

1. MACACA IRUS (F. CUVIER).

2 ♂.

2. TRAGULUS CANESCENS, MILLER.

1 ♂, 1 ♀.

3. TRAGULUS RAVUS, MILLER.

Kloss, p. 146.

1 ♂, 1 ♀.

4. RATUFA MELANOPEPLA, MILLER.

3 ♂.

5. SCIURUS PREVOSTII, DESM.

Kloss, p. 148.

1 ♀.

The specimens illustrate the first stage of *S. prevostii* towards its form *S.p. wrayi*, Kloss; the upper part of the fore limb and a portion of the lateral stripe being faintly washed with fulvous.

6. SCIURUS CONCOLOR, BLYTH.

Kloss, p. 149.

1 ♀.

7. SCIURUS MINEATUS.

Kloss, p. 149.

1 ♂.

8. *SCIURUS TENUIS*, HORSE.

Kloss, p. 150.

4 ♂, 1 ♀.

9. *SCIURUS ROBINSONI ALACRIS*, THOS.

Kloss, p. 150.

1 ♂, 1 ♀.

10. *LARISCUS JALORENSIS*, BONH.

Kloss, p. 150.

7 ♂, 7 ♀.

11. *RHINOSCIURUS TUPAIOIDES*, GRAY.

Kloss, p. 150.

2 ♂.

12. *EPIMYS VOCIFERANS* (MILLER).

Kloss, p. 151.

2 ♂, 1 ♀.

13. *EPIMYS PELLAX* (MILLER).

Kloss, p. 151.

1 ♀.

14. *EPIMYS ASPER* (MILLER).

Kloss, p. 151.

1 ♀.

15. *TUPAIA GLIS FERRUGINEA*, RAFFLES.

Kloss, p. 152.

3 ♂, 1 ♀.

16. *TUPAIA MALACCANA*, ANDERSON.

Kloss, p. 152.

4 ♂, 3 ♀.

17. *RHINOLOPHUS TRIFOLIATUS*, TEMM.

1 ♂.

BIRDS.

PHASIANIDÆ.

1. *RHIZOTHERA LONGIROSTRIS* (TEMM.).

1 ♂, 2 ♀.

Evidently fairly common.

2. *POLYPECTRON MALACCENSIS* (SCOP.).

1 ♂, 1 ♀ imm.

A characteristic lowland and swampy jungle bird.

3. *ARGUSIANUS ARGUS* (LINN.).

Kloss, p. 152.

1 ♂.

FALCONIDÆ.

4. *MICROHIERAX FRINGILLARIUS* (DRAPE).

Kloss, p. 153.

2 ♂, 1 ♀.

STRIGES.

5. KETUPA KETUPA (HORSF.).

1 ♀.

PSITTACI.

6. PSITTINUS INCERTUS (SHAW).

Kloss, p. 153.

1 ♀.

ALCEDINIDÆ.

7. CEYX TRIDACTYLA (PALL).

Kloss, p. 154.

1 ♀.

8. CEYX EUERYTHRA, SHARPE.

Kloss, p. 154.

1 ♂, 2 ♀.

9. HALCYON CONCRETUS (TEMME).

Kloss, p. 154.

1 ♂, 1 ♀.

MEROPIDÆ.

10. MEROPS SUMATRANUS (RAFFLES).

Kloss, p. 154.

1 ♂, 1 ♀.

CAPRIMULGIDÆ.

11. LINCORNIS TEMMINCKI, GOULD.

1 ♀.

CYPSELIDÆ.

12. CHETURA LEUCOPYGIALIS, BLYTH.

Kloss, p. 154.

1 ♂.

TROGONIDÆ.

13. PYROTROGON KASUMBA (RAFFLES).

1 ♂.

14. PYROTROGON DUVAUCELI (TEMME).

Kloss, p. 154.

1 ♂.

15. PYROTROGON ORROPHÆUS CAB. AND HEINE.

1 ♂.

After many years collecting, this species, which has not hitherto been represented in any of the local collections, has at last turned up. It is probable that it is confined to the south of the Peninsula where we have done comparatively little collecting and does not extend north of the territory of Malacca where Hume's collectors found it comparatively common. It is separated at a glance from *P. duvauceli* by its larger size, the entire absence of scarlet on the rump, the duller colour of the under surface and the narrower white

vermiculations on the wing coverts. It can hardly be regarded as a sub-species of *P. duvauceli* as that species occurs throughout the districts occupied by the present form.

Moulton in *Journ. Straits Branch Roy. Asiat. Soc.* No. 67, p.p. 151 (1914) regards *Pyrotrogon vidua* (Ogilvie Grant) as a very doubtful sub-species of this bird which is also recorded from Central Borneo by Buttikofer. The birds described by Grant as *Harpactes vidua* in *Cat. Birds Brit. Mus.* XVII, p. 501 (1892) came from Mounts Kinabalu and Dulit in N. W. Borneo.

CUCULIDÆ.

16. HIEROCOCCYX NANUS, HUME.

Shelley, *Cat. Birds Brit. Mus.*, xvii, p. 238 (1892).

A nearly adult male agrees well with Hume and Shelley's description of this rare cuckoo, which is new to the Federated Malay States Museums. Wing, 5.6; tail, 5.5 in.

17. CACOMANTIS MERULINUS (Scop.).

Kloss, p. 155.

1 ♀.

18. UROCOCCYX ERYTHROGNATHUS (HARTL.).

Kloss, p. 152.

1 ♀.

CAPITONIDÆ.

19. CHOTORHEA MYSTACOPHANES (TEMME.).

Kloss, p. 155.

1 ♂.

PICIDÆ.

20. PYRRHOPICUS PORPHYROMELAS (BOIE).

1 ♂, 1 ♀.

21. MICROPTERNUS BBACHYURUS (VIEILL.).

Kloss, p. 156.

1 ♀.

22. CHRYSOPHLEGMA HUMII, HARGITT.

Kloss, p. 156.

2 ♂.

23. SASIA EVERETTI, HARGITT.

Kloss, p. 157.

1 ♂, 1 ♀.

EURYLÆMIDÆ.

24. CALYPTOMENA VIRIDIS, RAFFLES.

Kloss, p. 157.

1 ♂.

PITTIDÆ.

25. PITTA CÆRULEA, RAFFLES.

1 ♂.

This fine species, though generally distributed throughout the length of the Peninsula, is everywhere rare; it is generally met with in low and swampy country.

26. *PITTA COCCINEA*, EYTON.

2 ♂.

Fairly common in low and swampy forest.

27. *PITTA CUCULLATA*, HARTL.

1 ♂, 6 ♀.

Common throughout the Peninsula in the winter months and, partially at any rate, migratory.

28. *EUCICHLA BOSCHII*, MÜLL. AND SCHLEG.

Kloss, p. 158.

2 ♂, 2 ♀, ♀ imm.

Collections made since the date of Kloss's note show that this species is fairly common throughout Western Pahang, frequenting the drier portions of the lower country forests especially near the limestone hills. The specimens ascribed to "Malacca" in the old trade collections from that settlement were probably obtained in the Triang or other districts of Western Pahang.

MUSCICAPIDÆ.

29. *PHILENTOMA VELATUM* (TEMN.).

1 ♂, 1 ♀.

30. *RHINOMYIAS PECTORALIS* (SALVAD.).

Kloss, p. 159.

1 ♂.

The question of the proper name for this much discussed species is shrouded in much confusion and must be deferred for the present. There are, at any rate, at least two applicable names earlier in date than that of Salvadori.

31. *ERYTHROMYIAS MUELLERI* (BLYTH).

Kloss, p. 158.

1 ♀.

Normally a submontane bird, only occasionally found at low elevations.

CAMPOPHAGIDÆ.

32. *PERICROCOTUS CINEREUS*, LAFR.

1 ♂, 2 ♀.

A winter visitor only to the Malay Peninsula.

PYCNONOTIDÆ.

33. *CHLOROPSIS ICTEROCEPHALA* (LESS.).

Kloss, p. 159.

1 ♂, 1 ♀.

34. *PYCNONOTUS SALVADORII*, SHARPE.

Kloss, p. 161.

1 ♀.

35. TRACHYCOMUS OCHROCEPHALUS (GM.).

Kloss, p. 160.

1 ♂, 1 ♀.

Common everywhere along the banks of the larger rivers.

36. RUBIGULA WEBERI (HUME).

4 ♀.

Very local but usually abundant wherever met with.

TIMELIIDÆ.

37. TURDINUS OLIVACEUS (STRICKL.).

Kloss, p. 161.

1 ♀.

38. TURDINUS MACRODACTYLUS, STRICKL.

Kloss, p. 161.

4 ♂, 2 ♀.

39. ERYTHROCICHLA BICOLOR (LESS.).

Kloss, p. 161.

1 ♂, 1 ♀.

40. ANUROPSIS MALACCENSIS, HARTL.

Kloss, p. 162.

1 ♂, 1 ♀.

41. DRYMOCATAPHUS NIGROCAPITATUS (EYTON).

Kloss, p. 161.

1 ♂, 1 ♀.

42. STACHYRIS POLIOCEPHALA (TEMN.).

Kloss, p. 162.

2 ♂, 1 ♀.

The preceding six species are all extremely common in heavy jungle throughout the Peninsula, away from the coastal zone up to about 2,000 feet in elevation.

43. STACHYRIS LEUCOTIS (STRICKL.).

1 ♂, 1 ♀.

Decidedly local and not found in the more northern parts of the Peninsula; we have only found it common on the hills of Negri Sembilan.

44. KENOPIA STRIATA (BLYTH).

Kloss, antea., vol. iv, p. 232.

2 ♂, 1 ♀.

Except apparently in the south of the Peninsula, this is a decidedly rare species throughout our area. In addition to the specimens cited by Kloss it has recently been found not uncommon at Rawang, in the low country of Selangor.

TURDIDÆ.

45. HYDROCICHLA RUFICAPILLA (TEMN.).

Kloss, p. 163.

2 ♂.

Exceedingly common on clear water streams in old jungle.

46. HYDROCICHLA FRONTALIS (BLYTH).

Kloss, p. 163.

1 ♀.

Very much rarer than the preceding.

47. LARVIVORA CYANEA (PALL).

1 ♂, 1 ♀.

LANIIDÆ.

48. HEMIPUS OBSCURUS (HORSE).

Kloss, p. 164.

1 ♀.

49. PLATYLOPHUS ARDESIACUS, CAB.

Kloss, p. 164.

1 ♂, 2 ♀.

DICRURIDÆ.

50. CHAPTIA MALAYENSIS (HAY).

Kloss, p. 164.

1 ♂.

51. DISSEMURUS PARADISEUS (LINN.).

Kloss, p. 164.

1 ♂.

ORIOOLIDÆ.

52. ORIOLUS ZANTHONOTUS, HORSE.

1 ♂.

NECTARINIIDÆ.

53. ÆTHOPYGA TEMMINCKI (S. MÜLL.).

1 ♂.

The only district in the Malay Peninsula where this beautiful sun-bird is at all common is the hill country of Negri Sembilan, though it has also been found on Bukit Kutu in Selangor, the Taiping Hills in Perak, and in the Siamese State of Trang. In the mountains of Western Sumatra it is very abundant.

54. ARACHNOTHERA LONGIROSTRIS (LATH.).

Kloss, p. 166.

1 ♂.

55. ARACHNOTHERA ROBUSTA, MÜLL AND SCHLEG.

1 ♂.

The rarest of the genus in the Malay Peninsula. With the exception of a small series from Trang we only possess two other specimens, from Ulu Gombak and Dusun Tua, both in the State of Selangor.

DICÆIDÆ.

56. PRIONOCHILUS MACULATUS, TEMM.

Kloss, p. 166.

1 ♂.

NOTES ON THE ABORIGINAL INHABITANTS OF IJOK IN THE DISTRICT OF SELAMA, PERAK.

By IVOR H. N. EVANS, B.A., ASSISTANT F.M.S. MUSEUMS.

(PLATE XVI).

THE following notes on the aborigines of Ijok in the Selama* District were made during the months of April and May, 1913. Perhaps one of the most noteworthy facts with regard to these people is that although they are in close contact and intercourse with the aborigines of Lenggong, Sumpitan, and Kuala Kenering—Sumpitan being only some eleven miles distant from Ijok—they nevertheless speak a somewhat different dialect the speech of the Lenggong people belonging to the group of dialects generally termed Northern Sakai, while that of the aborigines of Ijok is classed as Semang, (Western Negrito). Both tribes, however, are similar in physical appearance and are undoubtedly of Negrito origin,† though it is possible that there may be a slight strain of Sakai blood among them. Inter-marriage between members of the two divisions appears to be now common. The Ijok people said that, though having but little intercourse with either, they were related in speech to the aborigines of both Selama and Kupang, the latter presumably the river of that name not far from the Kedah boundary: in this they are probably correct, as the Negritos of Kedah all speak dialects belonging to the Semang group, as do those of Selama itself.

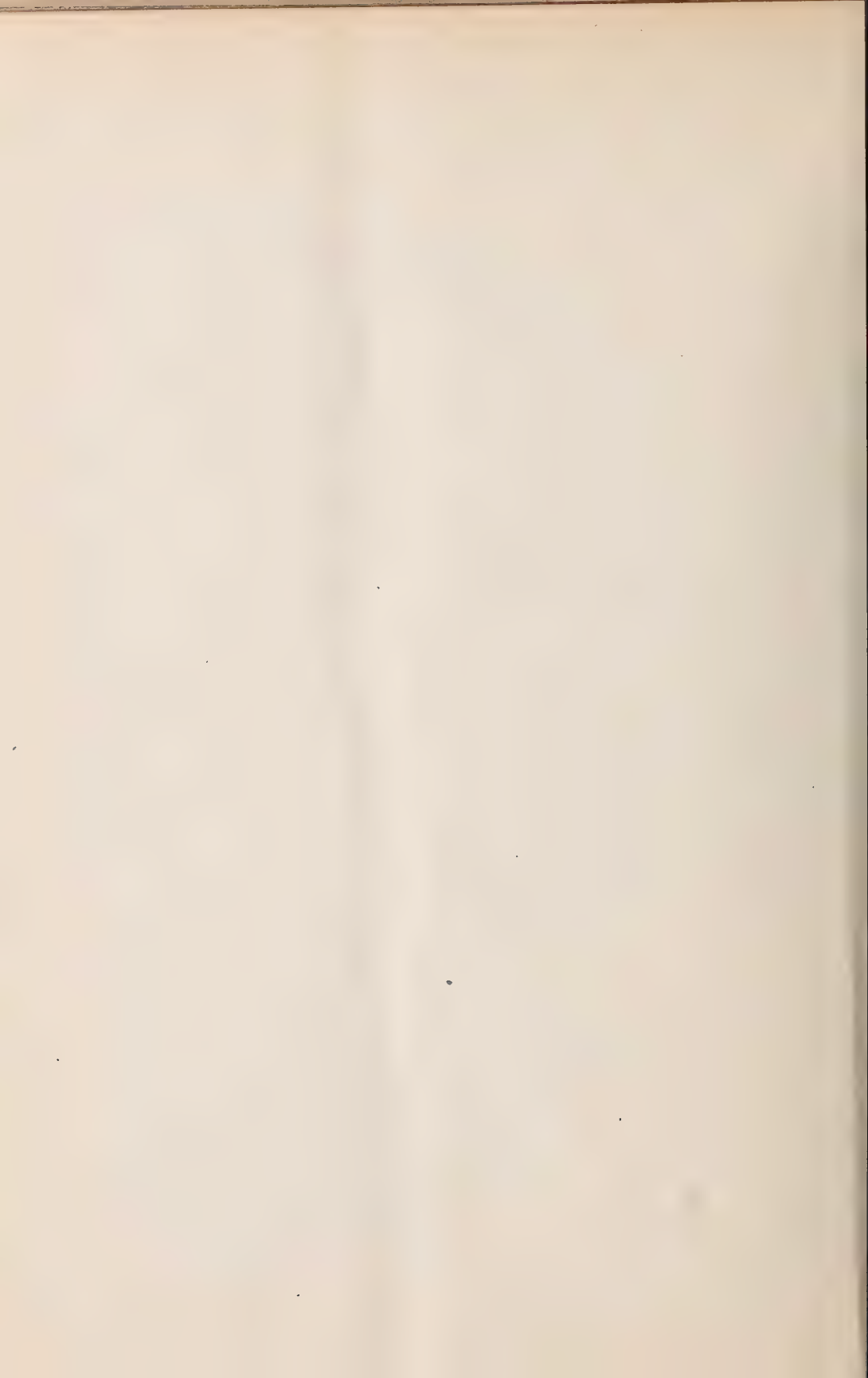
The Ijok Semang showed no fear of the writer and, if not sent for after a few days, used to come in to ask if they were not wanted; of course with the idea of obtaining food and presents. They seemed to be truthful in their replies to questions though all information obtained was checked as far as possible by questioning three or more individuals.

HABITATIONS.

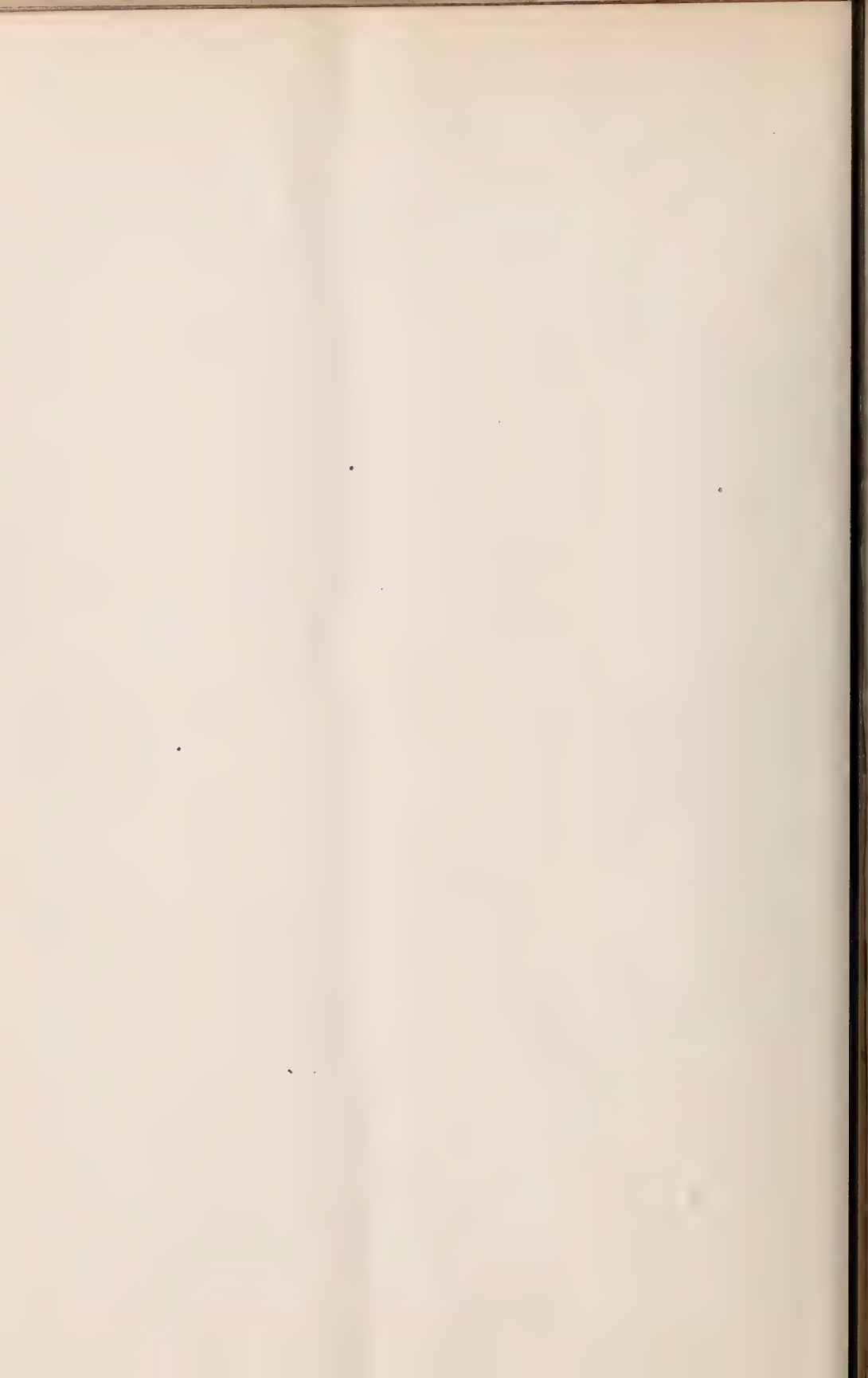
The Semang settlement was situated near the Chinese mine at Klian Gunong, about four miles from Ijok. The majority of the huts were of the same type as those seen on a former visit to Lenggong (see Journ. Fed. Malay States Mus., p. 64, No. 2, Vol. V; 1914). Each hut consisted of an arch-shaped framework of bent saplings with cross pieces connecting them horizontally. This structure was covered with a thatch of *tepus* leaves, and one end of the arch was usually stopped with a mat of palm leaves on a slight framework of sticks, the open end being used as a door.

* Selama village is some 18 miles from Ijok.

† The Ijok people, however, until very recently represented as pure a strain of Negrito as is to be met with in the Malay Peninsula. The Lenggong people on the other hand have a very much larger admixture of Sakai blood. H.C.R.



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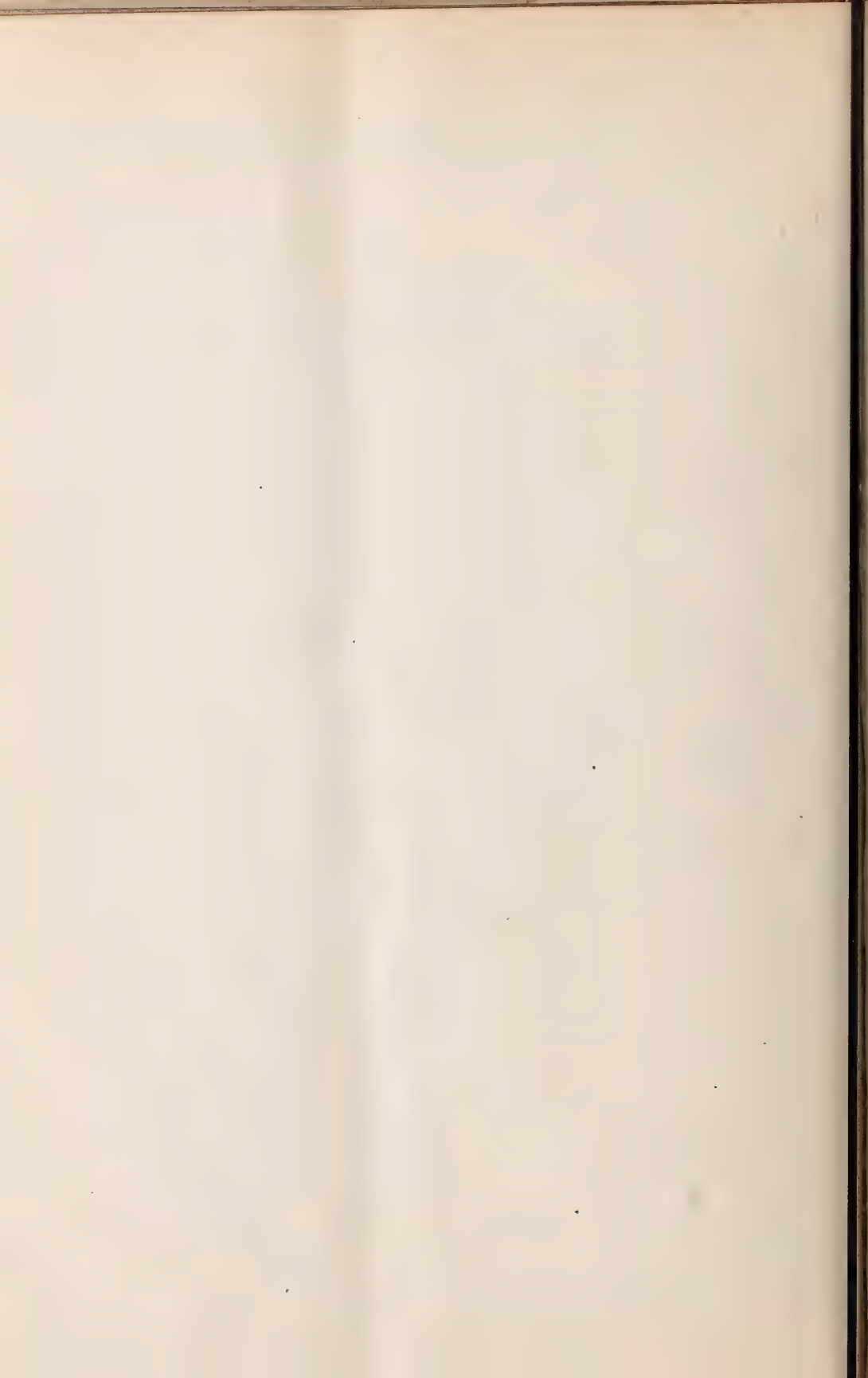


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MISCELLANEA (pp. 63—69).

The Vertebrate Collections of the Federated Malay States Museums—*H. C. Robinson.* The Semang between Janing and Rhaman—*F. O. B. Dennys.*

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1915.

IV. ON TWO NEW BIRDS FROM THE SOUTHERN PORTION OF THE MALAY PENINSULA.

By HERBERT C. ROBINSON, *M.B.O.U.* and
C. BODEN KLOSS, *M.B.O.U.*

In 1911 (*Ibis*, p. 79) we recorded the dull coloured little Flower Pecker, *Piprisoma modestum* (Hume), from Trang in the north of the Malay Peninsula, noting this locality as the most southerly hitherto recorded and, somewhat incautiously perhaps, stating that it certainly does not occur in that portion of the Malay Peninsula under British influence.

In this, however, we were in error, as amongst a collection obtained by the Museum collectors in January, 1913, at Bukit Tangga in Negri Sembilan, on a pass on the main Peninsular divide at about 1,500 ft. altitude occur four specimens of what are certainly this species. They, however, present sufficient differences from two specimens from Trang to merit separation as—

PIPRISOMA MODESTUM subsp. REMOTUM, subsp. nov.

Differing from the typical race in having the whole of the upper surface, sides of the head and outer aspect of the wings duller and darker grey, with less tinge of olive green. White on outer tail feathers perhaps rather less extensive, but this character not very marked. Total length, 3.8; wing, 2.37; tail, 1.4; bill from gape, 0.43 inches.

Type—Adult male, Bukit Tangga, Negri Sembilan, 1,500', 27th January, 1914 (*nat. coll.*) F. M. S. Mus. No. 1/14. Two other males and a female from the same locality examined.

Remarks: Bukit Tangga is nearly 400 miles distant from the nearest locality from which *P. modestum* has been obtained, otherwise we should have hesitated to describe this form on distinctions which are somewhat fine, though quite obvious in the four specimens before us.

RHINOMYIAS TARDUS, sp. nov.

In September 1913 the Museum collectors obtained on Bukit Tampin, a hill in Negri Sembilan near the Malacca boundary rising to 2,500 ft., two examples of an unknown species of *Rhinomyias*, and in the same month of the present year they collected a third specimen at Genting Bidai, 2,300 ft., a pass in the main range between Selangor and Pahang.

This species, which may be known as *RHINOMYIAS TARDUS, sp. nov.* differs from *R. pectoralis*, the only other species inhabiting the Malay Peninsula, in being more olivaceous throughout, the tail and edges of the wing feathers alone

having a slight rufescent tinge. On the under-surface the breast-band, light olive-brown in colour, is much broader, extending over the chest to the abdomen and flanks, and the white throat patch is less clear, being slightly washed with the colour of the chest and sides of neck, while the lower abdomen is pale ivory yellow.

The bill, as compared with that of *R. pectoralis*, has the upper mandible slightly less keeled and the lower is pale, not blackish.

Length of wing, 80 mm; tail, 61; tarsus 16.7; bill from gape, 20.5.

Dr. E. Hartert, who has examined the two individuals from Tampin (an adult and a slightly immature female) has kindly sent us the following remarks: "The new form resembles much more the large-billed *Rh. colonus*, Hartert, from Sula Mangoli and *Rh. nicobaricia* from the Nicobars (than *R. pectoralis*). It differs, however, from *Rh. colonus* chiefly in the tail, which is brown and not chestnut rufous, and from *Rh. nicobarica* also in the less rufescent edges to the rectrices, somewhat more olivaceous back and rump and a little darker chest-band. It agrees with both the latter in the lower mandible being *light in the adult birds*." In these two individuals the abdomen lacks the yellow tinge of the male.

Type: Adult male, Genting Bidai, Selangor-Pahang Boundary, Malay Peninsula, 2,300 ft. 19th September 1914, F. M. S. Mus. No. 157/14.

V. ON THE SPECIES OF MINIVETS
(PERICROCOTUS) OCCURRING IN
THE MALAY PENINSULA.

By HERBERT C. ROBINSON, C.M.Z.S., M.B.O.U.

The species of the genus *Pericrocotus* or Flycatcher Shrikes are amongst the most brilliant and attractive of Oriental birds and much attention has, as a consequence, been paid to them both by systematists and collectors. Owing, however, to the fact that the characters relied on to separate the species are, in many cases, variable within the species, the distinctions between certain of the allied forms are by no means so clear as might be desired, and a good deal of confusion exists as to the actual range and occurrences of several of the Malayan species.

The F. M. S. Museums possess very large series of all the species from the Malay Peninsula, and in the present paper I have attempted to arrange these and the synonymy belonging them without in any way claiming any originality of treatment.

KEY TO THE SPECIES.

- A. Plumage with no red or yellow— *P. cinereus*, p. 32.
- B. Plumage mainly red or yellow—
 - a. The central tail feathers entirely black in the male :
quill lining yellow ... *P. igneus*, p. 32.
 - b. The central tail feathers partly
red in the male, quill lining
red
- A1. With no isolated red or yellow
marks on the outer webs of the
tertiaries ... *P. montanus*, p. 33.
- B1. With isolated red or yellow marks
on the outer webs of the tertia-
ries
 - a. Larger, wing as a rule exceed-
ing 85 mm. ... *P. zanthogaster*
flammifer, p. 35.
 - b. Smaller, wing less than 85
mm. ... *P. zanthogaster*
zanthogaster, p. 37.

PERICROCOTUS CINEREUS. The Ashy Minivet.

Pericrocotus cinereus, Lafr.; *Hume, Stray Feath.* v, p. 175, 176 (1876); *Sharpe, Cat. Birds, Brit. Mus.* iv, p. 83 (1879); *Ogilvie, Grant, Fascic. Malay. Zool.* iii, p. 90 (1905); *Robinson, Hand-list Birds Malay Pen.*, p. 14 No. 394 (1910); *Robinson & Kloss, Ibis*, 1911, p. 55.

Adult male.—Whole under surface and under tail coverts and crown to behind the eye, white, inclining to ashy on the lower surface; lores, a stripe through the eye, hind, crown and nape glossy black; mantle, back, upper tail coverts, lesser and inner wing coverts and tertials clear grey; tail feathers blackish grey, all except the two median pairs with the terminal portions largely white, increasing in extent towards the outer pairs. Primaries and secondaries blackish brown, with a broad diagonal band of white on the inner webs except on the outer primary, increasing interiorly; bases of the secondaries broadly white. Primary coverts blackish, the innermost broadly edged with grey on the outer webs. Outer axillaries whitish, inner slate grey broadly tipped with white, inner wing coverts mingled white and slate grey.

Adult female.—The series before me, if the sexing is to be relied on, indicates that the adult female only differs from the other 'sex' in having the white frontal band considerably narrower, not extending beyond the eyes.

Immature.—Immature birds of both sexes, which in the Malay Peninsula are in the large majority, differ from the adults in lacking the clear white frontal band; the lores, occiput and nape are ashy grey, not glossy black, and the primaries and central tail feathers are more brownish.

Dimensions.—Adult male: total length, 7.1; wing, 3.6; tail, 3.7 in.

Adult female: total length, 7.2; wing, 3.7; tail, 3.75 in.

Localities in the Peninsula.—Siamese Malay States: Trang (December, January, February). Pulau Langkawi (November, December). Penang (March). Perak: Temerloh (January). Selangor: Klang Gates (January); Kuala Lumpur (December, February, March); Kuala Langat, Batu (November, December); Pulau Pintu Gedong (October). Pahang: Krau River (November).

Note.—As the above dates show this species is not resident in the Malay Peninsula but only appears during the winter months, when it often occurs in considerable numbers, especially on the coast.

PERICROCOTUS IGNEUS. The Fiery Minivet.

Pericrocotus igneus, Blyth; *Sharpe, Cat. Birds Brit. Mus.* iv, p. 78 (1879); *Robinson, Hand-list Birds Malay Penins.* p. 14, No. 393 (1910).

Adult male:—Head all round, throat, mantle, greater part of the primaries and secondaries, wing-coverts, centre pair of tail feathers greater part of the second innermost pair and the bases of the other pairs in a lessening degree glossy black. External aspect of the wings with a broad diagonal bar of orange red, starting on the fourth primary and extending to the innermost tertials, the last tertial only entirely black; inner aspect of the wing with a similar lemon yellow bar formed by patches on the inner webs of the primaries and secondaries; rump and upper tail coverts, under surface except the throat and those parts of the tail feathers that are not black, vermilion orange, more crimson on the rump, the bases of the feathers chrome. Axillaries and under wing coverts, chrome, tipped with orange red, their bases black, thighs black. Angle of the wing orange chrome.

Adult female:—Those portions of the plumage that are glossy black in the male, grey with a faint yellowish cast, blacker on the wing and tail feathers; a frontal band and eye ring orange chrome, this colour extending as a short superciliary beyond the eye. Under surface chrome yellow, under wing coverts and wing band similar, lower back and upper tail coverts vermilion, light portion of the tail orange yellow, suffused with vermilion, thighs mingled greyish and yellow.

Immature:—Resemble the female but are brownish above, each feather edged with yellowish white, frontal band and eye ring absent; beneath pale fuscous faintly barred with brownish white, the middle of the abdomen pale yellow.

Dimensions:—Adult male: total length, 5.75; wing, 2.9; tail 2.8 in.

Adult female: total length 5.5; wing 2.75; tail 2.8 in.

Localities in the Peninsula:—Siamese Malay States: Bandon, Ban Kok Klap (July). Perak: Temongoh (July); Parit (September). Selangor: Ulu Gombak (September); Klang Gates (January); Ginting Bidai, 2,300' (May); Cheras (March). Negri Sembilan: Gunong Tampin (September). North Johore: Segamat, Padang Tuan (September). East Johore: Tanjong Leman (June).

Notes:—This species is resident and breeds in the country apparently from May to June. It is fairly common along the east coast among Casuarinas and in forest country up to about 2,500' but is everywhere much scarcer than either *P. montanus* or *P. zanthogaster*, nor is it found in such large flocks.

PERICROCOTUS MONTANUS. Wray's Minivet.

Pericrocotus montanus, *Ann. Mus. Civ. Gen.* xiv, p. 205 (1879) (*Mt. Singalan, W. Sumatra*); *Sharpe, Ibis*, 1889, p. 193 (*Kinabalu, N. Borneo, 8,000'*); *id Ibis*, 1892, p. 435 (*Mt. Dulit, Borneo, 5,000'*); *Salvad. Ann. Mus. Civ. Gen.* (2) xii, p. 54 (1891) (*Toba Lake, Central Sumatra*); *Hartert Nov. Zool.* ix, p. 554

(1902) (*Gunong Tahan, Pahang*); Ogilvie Grant, *Fascic. Malay Zool.* iii, p. 91 (1905) (*Perak, Pahang Boundary, 4,000'*); *id.* *Journ. Fed. Malay States Mus.* iii, p. 34 (1908); *Robinson tom. cit.* ii, p. 192 (1908); *id.* *Hand-list Birds Malay Penins.* p. 14, no. 391 (1910).

Pericrocotus cinereigula, Sharpe, *Ibis*, 1889, p. 192; Whitehead, *Exploration, Kinabalu*, plate to p. 40 (1893).

Pericrocotus wrayi, Sharpe, *P. Z. S.* 1888, p. 269, pl. xv (*Batang Padang Mountains*).

Pericrocotus croceus, Sharpe, *P. Z. S.* 1888, p. 269 (*Gunong Batu Puteh, S. Perak*); Bonhote, *P. Z. S.* (i) 1901, p. 60 (*Gunong Inas, N. Perak*); Ogilvie Grant *Fascic. Malay Zool.* iii, p. 91 (1905) (*Perak-Pahang boundary, 4,000'*).

Adult male:—Head, nape, mantle, inner and lesser wing coverts shining black; ear coverts, sides of the face and throat dark grey. Primaries and secondaries the bases of all the tail feathers and the greater part of the two median pairs, black; greater inner wing coverts with their terminal portions scarlet; Primaries and secondaries from the fifth primary inwards with their outer webs edged with scarlet, increasing progressively inwards, the basal half of both webs scarlet orange. Rump and upper tail coverts scarlet, under surface except the throat and portion of the tail that is not black, scarlet orange, thighs mingled black and orange buff or apricot; wing lining edge of the wing and axillaries orange. Bill and feet black, iris dark hazel.

Adult female:—Distribution of colour similar to that of the male, the red throughout being replaced by yellow intermediate between "Cadmium Yellow" and "Light Cadmium" of Ridgeway. The black of the upper surface more greyish blue and less shining than that of the male and the ear coverts of a paler grey. Chin and upper throat greyish white. Thighs mingled white and brownish black. This is the stage described as *P. croceus* by Ogilvie Grant (*Fascic. Malay. loc. cit.* p. 91.)

Immature.—The immature of both sexes are similar to the adult female, except that the head and mantle are of a paler grey, with much less gloss and the yellow of the rump and upper tail coverts has a strong cast of olive, while the bases of the feathers are broadly grey, giving an impression of ill-defined cross barring. This is the stage figured by Sharpe (*loc. cit.*) as the adult female of *P. wrayi*. The adult male plumage appears to be attained from this stage in part by a moult of the yellow feathers and in part at least by a direct colour change, though by the majority of authorities on moulting this is roundly asserted to be impossible.

Juvenile.—Younger birds still resemble the immature female but have a greenish tinge over the grey of the upper parts, the ear coverts even paler grey and the feathers of the head and mantle narrowly edged with dirty white.

Dimensions.—Adult male—Total length, 6.7; wing, 3.15; tail 3.9 in.

Adult female—Total length, 6.7; wing, 3.1; tail, 3.8 in.

Localities in the Peninsula. Perak: Larut Hills, 3—4,000' (October); Gunong Kerbau, 5,000' (March); Telom, Perak Pahang Boundary 3—4,000' (September, November, December). Pahang: Gunong Tahan, 5,000' (July). Selangor: Bukit Fraser, 4,000' (October): Semangko Pass, Selangor, Pahang border (February, March, November) Gunong Mengkuang Lebah, 5,000' (January, March); Gunong Menuang Gasing, Ulu Langat, 4,000' (May). Elsewhere common in the high mountains of Borneo and Sumatra.

Notes.—As the synonymy shows this species which is fairly wide, ranging over elevated land in the Malayan region, has received numerous names, partly owing to the fact that the colour of the throat in the male is very variable, ranging from a light grey to an almost glossy black, while the immature birds of both sexes differ from the adult female.

The large series before me, which includes topotypes of Salvadori's *P. montanus*, comprises specimens which can be referred to all the nominal species from one and the same locality and all, therefore, have to be included under Salvadori's as the earliest name, as has already been pointed out by Hartert. Judging from the dates of immature skins in the Museum the species probably begins to breed in the Peninsula about December or January.

***Pericrocotus xanthogaster*, subsp. *flammifer*.**

Davidson's Minivet.

Pericrocotus flammifer, Hume, *Stray Feath.* iii, p. 321 (1875); *id op. cit.* v, pp. 175, 195 (1877); Hume & Davidson, *op. cit.* vi, p. 211; Sharpe, *Cat. Birds Brit. Mus.* iv, p. 74 (1879); Oates, *Faun. Brit. Ind. Birds*, i, p. 477 (1889); Ogilvie Grant, *Fascic. Malay. Zool.* iii, p. 91 (1905); Robinson, *Journ. Fed. Malay States Mus.* ii, p. 192 (1908) Robinson & Kloss, *Ibis*, 1911, p. 54.

Pericrocotus speciosus fraterculus (*nec. Swinhoe*), Butler, *Journ. Straits Branch Royal. Asiat. Soc.* No. 32, p. 17 (1899); Hartert, *Nov. Zool.* ix, p. 555 (1902).

Adult male.—Head all round, nape, mantle, throat, outer and lesser wing coverts glossy black. Inner webs of central pair of tail feathers and bases of the remainder, black, the black lessening towards the outer pairs. Primaries, secondaries and tertials black, with an oblique bar of crimson scarlet on the primaries, beginning on the outer web of the fourth primary; secondaries and all but the innermost tertials with their basal halves scarlet; the inner tertials with isolated drops of scarlet on their outer webs; inner primary coverts

with their terminal two-thirds scarlet; axillaries and under wing coverts orange, the bases of the former black; thighs black; rest of the plumage brilliant scarlet orange, more scarlet on the rump and upper tail coverts, the bases of the feathers of the abdomen orange chrome. Bill and feet black, iris dark hazel.

Adult female.—Head behind the level of the eyes, nape, mantle and scapulars grey, slightly suffused with greenish. Forehead to the eyes, a patch round the eyes and a short superciliary stripe, extending slightly beyond the eyes bright chrome yellow. Stripe from the nostrils to the eyes, blackish. Lower back, rump and upper tail coverts, greenish yellow. Whole under surface bright chrome yellow, the lower of the feathers of the abdomen white; the thighs mingled brownish and yellow. Wings black, the first four primaries uniform on the outer web, the remainder with a diagonal chrome yellow bar. Secondaries and tertiaries with their basal third chrome yellow and with elongated isolated drops of the same colour on the outer webs. Lesser wing coverts greyish, except on the angle of the wing; greater ones black, their tips chrome yellow. Under wing coverts pale yellow and fuscous, the axillaries yellow with their bases, blackish. Innermost pair of tail feathers entirely black, the next pair mainly black, the third pair about half black, the black regularly diminishing to the outermost pair in which only the basal third or fourth is black; remainder of the feathers pure chrome yellow.

Dimensions.—Adult male. Total length, 6.75; wing, 3.38; tail, 3.25 in.

Adult female. Total length, 6.75; wing 3.4; tail, 3.25 in.

Immature.—The not fully adult birds of both sexes resemble the adult female, from which garb the male changes into the adult dress in part by a deepening of the pure yellow feathers to orange and thence to vermilion scarlet, this change being very well shown in the large series in the Selangor Museum. Still younger birds have the yellow colour beneath duller, the feathers of the head and mantle with white margins, and the primaries edged with white.

Localities in the Peninsula.—Siamese Malay States: Bandon (June); Trang (November, December, January). Perlis: Pelarit (November). Perak: Temongoh (July); Taiping (July). Selangor: Semangko Pass, 2,700' (February); Bukit Kutu (August); Klang Gates (January); Ginting Bidai, 2,300' (September); Ulu Gombak (September). Pahang: Bentong (June).

Notes.—This race is widely spread throughout the Peninsula in submontane country, ranging up to about 3,000' in altitude, above which its place is taken by *P. montanus*. As is the case with many other species originally described from Southern Tenasserim by Hume it is evident that it has no

claim whatever to specific rank, but is only a slightly larger form of the Sumatran and Bornean *P. xanthogaster*. Raffles with the female slightly more brightly coloured. None of the Peninsula examples are as large as those of Hume's series from Tenasserim, though northern specimens are decidedly larger than those from Johore and from authentic specimens of *P. xanthogaster* from Sumatra and Borneo with which I have compared them. The presence or absence of red on the outer web of the fourth primary of the male, seems to be of little diagnostic importance though it is more frequently absent in southern than in northern peninsular specimens. It is present in three out of four Sumatran specimens and in both the Bornean skins which I have examined.

***Pericrocotus xanthogaster* subsp. *xanthogaster*.**

Raffles' Minivet.

Lanius xanthogaster, *Raffles, Trans. Linn. Soc.* iii, p. 309 (1822). *Pericrocotus xanthogaster*, *Sharpe, Stray Feath.* iv, p. 208 (1876); *Tweedd. Ibis*, 1877 p. 315; *Sharpe, Cat. Birds Brit. Mus.* iv, p. 74 (1879); *Nicholson, Ibis*, 1883, p. 46. *Buttikofer, Notes Lev. Mus.* ix, p. 46 (1887). *Pericrocotus ardens*, *Bp. Consp.* i, p. 357 (1851); *Hume, Stray Feath.* v, p. 196 (1877).

Pericrocotus subardens, *Hume, Stray Feath.* v, p. 196.

Adult male.—Practically indistinguishable from that of *P. xanthogaster flammifer* but slightly smaller in size.

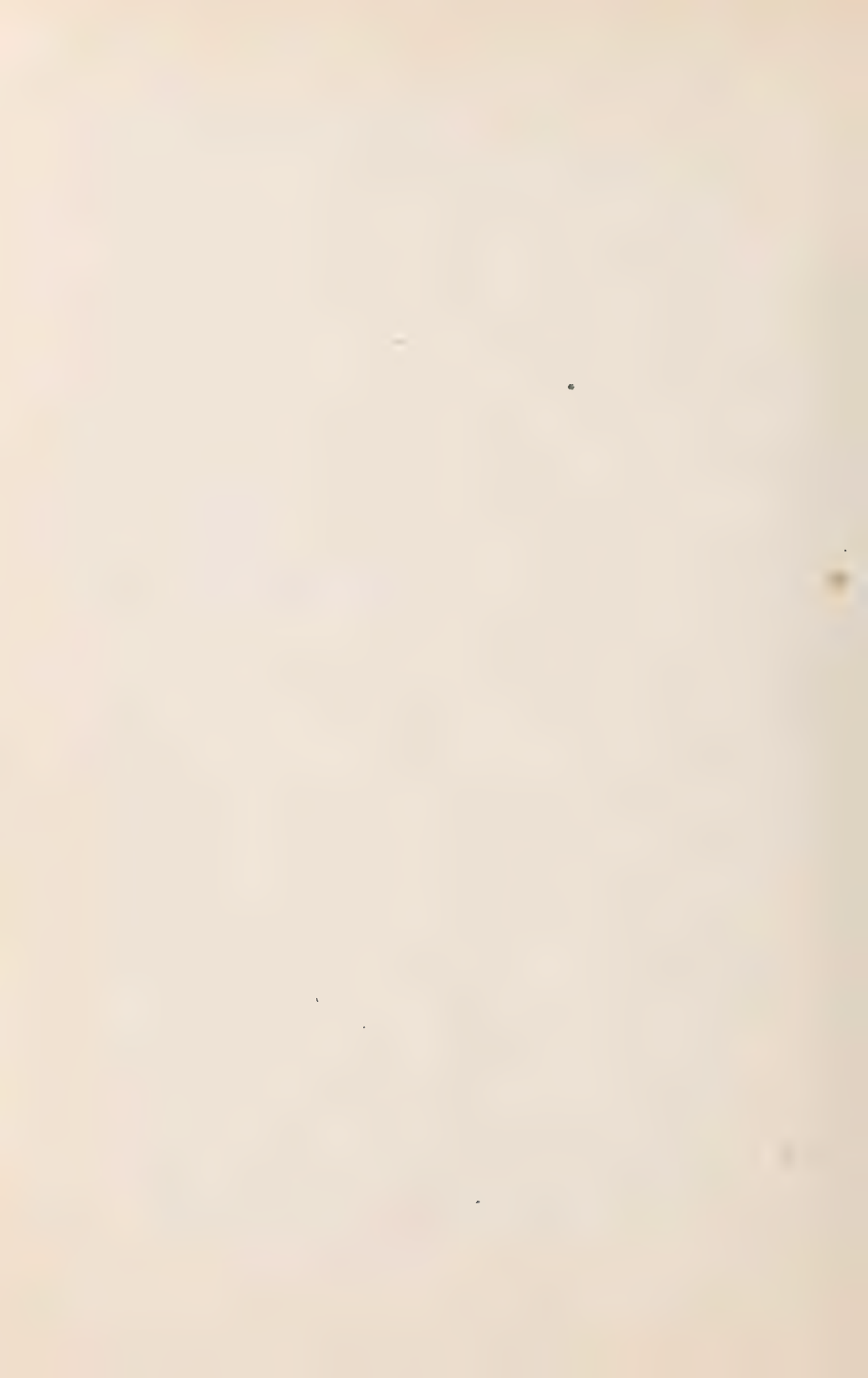
Adult female.—Yellow on the forehead, more restricted, and tint of the lower back and rump and under surface more suffused with greenish olive.

Dimensions.—Adult male.—Total length, 6.4; wing, 3.15; tail, 3.1 in.

Adult female.—Total length, 6.7; wing, 3.08; tail, 3.1.

Localities in the Peninsula.—Negri Sembilan: Bukit Tangga (January, July). Pahang: Krau River (November). North Johore: Segamat, Padang Tuan (February). Malacca (Brit. Mus.). South Johore (*Hume Coll.*): Singapore (Brit. Mus.).

Remarks.—Owing to the comparatively small series available, especially of females, the identification of the bird from the southern third of the Malay Peninsula with that from Sumatra and Borneo is not altogether certain, though it is probably correct. South of the termination of the main range in Southern Selangor the bird is decidedly rare and but few specimens are on record. In Sumatra and Borneo it appears to be fairly common.



MISCELLANEA.

THE VERTEBRATE COLLECTIONS OF THE FEDERATED MALAY STATES MUSEUMS.

The collection of terrestrial vertebrates from the Malay Peninsula in the possession of the Federated Malay States Museums is now so nearly complete that it may be of interest to give some comparative figures concerning it.

In 1899 and 1900, Capt. Stanley Flower, then in charge of the Bangkok Museum, devoted much attention to the mammalian fauna of Siam and the Malay Peninsula, and, after studying all the available collections both local and in the British Museum, compiled a list which is published in the *Proceedings of the Zoological Society of London*, 1900, pp. 306-379. A summary of his list gives the following figures:

	Species.
Primates	10
Carnivora	28
Ungulata	14
Rodentia	30
Insectivora	6
Cetacea	5
Sirenia	1
Edentata	1
Chiroptera	39
Total	134

The intensive study of mammals can only have said to have begun with the opening days of the present century, and since 1899 very great attention has been paid to the Malaya Peninsula and region, principally by Doctor W. L. Abbott, of Philadelphia, whose collections have been worked out by Messrs. G. S. Miller and M. W. Lyon of the United States National Museum at Washington, and by the Federated Malay States Museums. It had been pointed out by English naturalists and by the authorities of the British Museum that it was unfortunate that the proper study of the fauna of a British Possession could only be effectively carried out in a foreign Museum, owing to the lack of modern material in the national collection. As a result, since 1908 very much of the energy of the Museum staff and considerable sums of money have been devoted to removing this reproach. After five years' work, figures dealing with the mammalian fauna of the Malay Peninsula now stand as follows:

NUMBER OF RACES OF MAMMALS KNOWN FROM THE MALAY
PENINSULA AND ADJACENT ISLANDS, 1913.

	Total Number.	Number in Federated Malay States Museums.
Primates	... 20	... 19
Carnivora	... 34	... 32
Ungulata	... 22	... 19
Chiroptera	... 63	... 46
Insectivora	... 26	... 24
Rodentia	... 118	... 112
Cetacea	... 8	... 4
Sirenia	... 1	... —
Edentata	... 1	... 1
	---	---
Total	... 293	... 257
	---	---

Of the additions to the list 71 races have been described either from material actually in the Federated Malay States Museums or from specimens collected and sent to the British Museum.

The 36 forms not represented in the local Museums with the localities from which they were obtained are as follows:

- | | | |
|--|-----|-------------------------------|
| 1. <i>Macaca capitalis</i> | ... | Trang. |
| 2. <i>Arctonyx dictator</i> | ... | Trang. |
| 3. <i>Lutra macrodus</i> | ... | ? |
| 4. <i>Bos sondaicus butleri</i> | ... | Perak. |
| 5. <i>Tragulus stanleyanus</i> | ... | Uncertain. |
| 6. <i>Rhinoceros sondaicus</i> | ... | — |
| 7. <i>Sciuropterus genibarbis malaccanus</i> | ... | Malacca. |
| 8. <i>Pteromyscus pulverulentus</i> | ... | Malacca. |
| 9. <i>Sciuropterus phayrei</i> | ... | North Malay
Peninsula. |
| 10. <i>Sciurus caniceps epomophorus</i> | ... | Salanga Island. |
| 11. <i>Epimys pullus</i> | ... | Tioman Island. |
| 12. <i>Gunomys varius varillus</i> | ... | Penang Island. |
| 13. <i>Ptilocercus lowi continentis</i> | ... | Klang Gates,
Kuala Lumpur. |
| 14. <i>Gymnura gymnura</i> | ... | South Malay Pen-
insula. |
| 15. <i>Balænoptera indica</i> | ... | } Surrounding seas. |
| 16. <i>Physeter macrocephalus</i> | ... | |
| 17. <i>Steno plumbeus</i> | ... | |
| 18. <i>Sotalia sinensis</i> | ... | |
| 19. <i>Halicore duyong</i> | ... | |
| 20. <i>Pteropus intermedius</i> | ... | Trang. |
| 21. <i>Rhinopoma microphyllum</i> | ... | Ghirbi. |
| 22. <i>Taphozous saccolæmus</i> | ... | Peninsula. |
| 23. <i>Chærephon plicatus</i> | ... | Peninsula. |
| 24. <i>Chærephon johorensis</i> | ... | Johore. |
| 25. <i>Myotis oreias</i> | ... | Singapore. |
| 26. <i>Myotis emarginatus</i> | ... | Biserat. |

27.	<i>Pipistrellus imbricatus</i>	...	...	Peninsula.
28.	<i>Pipistrellus ridleyi</i>	...	...	Selangor.
29.	<i>Pipistrellus tenuis</i>	...	...	Penang.
30.	<i>Hesperoptenus tomesi</i>	...	...	Malacca.
31.	<i>Chilophylla hirsuta</i>	...	...	Port Swettenham.
32.	<i>Rhinolophus cœlophyllus</i>	...	...	Kedah.
33.	<i>Hipposideros stoliczkanus</i>	...	...	Penang.
34.	<i>Petalia tragata</i>	...	...	Peninsula.
35.	<i>Kerivoula picta</i>	...	...	Penang.
36.	<i>Kerivoula bicolor</i>	...	...	Jalor.

The original specimens of Nos. 2, 4 and 13, which were at the time unique, have been deposited in the National Museum at South Kensington.

Of the remaining 33, 26 species are of marine or nocturnal habits and are, therefore, difficult to obtain; *Gunomys varius varillus* is an introduced form in Penang; *Epimys pullus* is a small rat from Tioman known from one specimen only, while *Tragulus stanleyanus*, though said to occur in Batang Padang, has never been obtained of late years. The last species *Gymnura gymnura* is the southern race of the common *tikus bulan* found throughout the Peninsula.

The total number of birds ascribed to the Malay Peninsula on any evidence, good, bad or indifferent, is now 654. Of these, 26 are either species identical with other forms or which have been recorded from the region erroneously or on the strength of wrongly identified or captive specimens, leaving 628 species about which no doubt exists.

Of these the Federated Malay States Museums possess specimens of 589, leaving 39 species still to be procured. Of these 39, we have at different times possessed examples of six, which have either been transferred to the British Museum or perished from defective preservation. Of the remaining 33 forms, four are oceanic birds, rarely approaching land, six are marsh or shore birds, nine are migratory species only resting in the Peninsula for very short periods on their way north or south, two are owls of extreme rarity, one (*Acridotheres torquatus*) is known from one specimen only which ought to be in the Singapore Museum but cannot now be found, while the remaining eleven are known almost entirely from the extreme north of the Peninsula, though one (*Cyornis rueckii*) of very doubtful validity is described from Malacca.

The only additions to be looked for are, therefore, either occasional migrants or actual novelties, which are necessarily few and far between, as, ornithologically speaking, the Malay Peninsula is better known than almost any other area of equal extent in Asia.

As showing the advance that has been made in the last thirty years, Hume, in 1880, gives the number of birds actually known from the Malay Peninsula as 459, of which he had procured 415. The corresponding figures are now 628 and 589, or increases of 34.6 and 41.9 per cent., respectively.

SPECIES RECORDED FROM THE MALAY PENINSULA BUT NOW
REMOVED FROM THE LIST FOR VARIOUS REASONS.

- 28.* *Carpophaga griseicapilla*
(Wald.) Wrong identification, = *C. badia* (Temm.)
34. *Turtur humilis* (Temm.) ... Specimens almost certainly caged.
53. *Seena seena* (Sykes.) ... Specimens examined = *Sterna media* (Horsf.)
55. *Sterna longipennis*, Nordm. *Sterna tibetana*, Saunders,
80. *Himantopus himantopus*
(Linn.) Transposed label.
130. *Nyroca fuligula* (Linn.) ... Alleged collector obtained the dry skin only; real locality therefore doubtful.
175. *Falco severus*, Horsf. ... No definite locality.
183. *Scops sunia*, Hodgs. ... = *Scops malayana*, Hay
220. *Halcyon humii*, Sharpe ... Identical with *H. armstrongi*, Sharpe.
307. *Iyngipicus pumilus*,
Hargitt Not separable from *I. canicapillus*, Blyth.
310. *Dendrocopus analis* (Horsf.) No authentic locality or collector.
316. *Micropternus phæoceps*,
Blyth Specimen identified as such is *M. brachyurus* (Vieill.)
353. *Cyornis tickelliae*, Blyth ... Specimens identified as such are *C. sumatrensis*, Sharpe.
354. *Cyornis frenata*, Hume ... Female of *C. erythrogaster*, Sharpe.
357. *Cyornis turcosa*, Bruggem ... Female of *C. elegans* (Temm.)
384. *Stoparola melanops* (Vig.) Specimens identified as such are *S. thalassinoides* (Cab.)
425. *Pycnonotus blanfordi*, Jerd. *P. robinsoni*, Grant.
390. *Pericrocotus fraterculus*,
Swinh. Specimens identified as such are *P. flammifer*.
455. *Setaria melanocephala*,
Davison Type and topotypes are indistinguishable from *S. affinis* (Blyth).
- 463A. *Stachyris nigriceps* (Hodgs.) *C. davisoni*, Sharpe

* The numbers quoted are those of "A Hand-list of the Birds of the Malay Peninsula, south of the Isthmus of Kra" by H. C. Robinson, Kuala Lumpur, 1910.

- | | | |
|-------|---|--|
| 476A. | <i>Myiophonus temmincki</i> , Vig. | <i>M. crassirostris</i> , Robinson |
| 557. | <i>Sturnia malabarica</i> (Gm.) ... | Escaped cage bird or
transposed label |
| 558. | <i>Sturnia nemoricola</i> (Jerd.) ... | Do. do. |
| 562. | <i>Sporæginthus amandava</i>
(Linn.) | Do. do. |
| 563. | <i>Sporæginthus flavidiventris</i>
(Wall) | Do. do. |
| | <i>Ruticilla aurea</i> , Temm. ... | No authentic locality. |

SPECIES UNDOUBTEDLY OCCURRING IN THE MALAY
PENINSULA BUT NOT REPRESENTED BY LOCAL SPECIMENS
IN THE FEDERATED MALAY STATES MUSEUMS.

14. Rheinwardtius nigrescens, Rothsch.
48. Porphyrio edwardsi, Elliot.
64. Anous stolidus (Linn.)
65. Micranous leucocapillus, Gould.
67A. Hoplopterus ventralis (Wagl.)
73. Ochthodromus veredus (Gould).
104. Thaumatisbis gigantea (Oust.)
107. Leptoptilus dubius (Gm.)
131. Plotus melanogaster (Gm.)
133. Phalacrocorax javanicus (Horsf.)
134. Fregata aquila (Linn.)
136. Phæthon indicus, Hume.
138. Pelecanus roseus, Gm.
142A. Neophron ginginianus (Lath.)
145. Circus pygargus, Linn.
157. Circaetus hypoleucus (Pall.)
179. Asio otus (Linn.)
192A. Strix ididum radiatum (Temm.)
194. Glaucopteryx javanica (Horsf.)
203. Coracias affinis, McClell.
208. Pelargopsis burmanica, Sharpe.
245. Collocalia gigas, Hartert.
268. Cuculus canorus, Linn.
275. Chalcococcyx basalis (Horsf.)
302. Gecinus robinsoni, Grant.
324. Hemicerus canente (Less.)
351. Cyornis ruecki, Oust.
414. Microtarsus cinereiventris (Blyth).
416. Criniger salangæ, Sharpe.
441. Timelia jerdoni, Walden.
491. Oreocichla affinis, Richm.
507. Sutoria sutoria (Forst.)
517. Acanthopneuste trochiloides, Sundev.
520. Acanthopneuste magnirostris (Blyth).
544. Dicrurus nigrescens, Oates.
560. Acridotheres torquatus (Davison).
572. Chlorura sp.
576. Motacilla feldeggii, Mich.
579. Motacilla taivanus, Swinh.



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32 RAFFLES PLACE AND 194 ORCHARD ROAD.

1916.

XV. THE NATURAL HISTORY OF KEDAH PEAK.

By H. C. ROBINSON, C.M.Z.S., M.B.O.U., and

C. BODEN KLOSS, F.Z.S., M.B.O.U.

I. INTRODUCTION.

Kedah Peak, or Gunong Jerai, to use its Malay name, is a familiar landmark to all voyagers through the Straits of Malacca, dominating as it does the roadstead of Penang.

It is situated about 22 miles NNE of Penang with its summit about 6 miles from the sea and according to the latest computations attains a height of 3,976 feet being, if we except the Bintang Range on the Perak border, considerably the highest mountain in the State of Kedah. It is quite isolated, standing on a base that does not exceed 50 square miles, and is separated by low land not exceeding 50 feet in elevation from all other hills. Its slopes to the north and west are much steeper than those to the south and east and vertical rock faces, many hundreds of feet in height, exist. Geologically the mountain appears to consist of sandstones and quartzites of varying degrees of hardness, traversed by veins of quartz, while in one or two places deposits of haematite are found. It is well watered, being cut into by three great valleys which have been utilized for a water supply to the neighbouring districts and the cliffs are ornamented in several places by cascades which are very conspicuous after wet weather of any duration.

On the lower slopes the forest is now poor, timber cutting having been, until the last few years quite unrestricted, but a good deal of Meranti (*Shorea* and *Hopea* spp.) is found up to about 2,000 ft., while Medang (*Lauraceae*) is also abundant. There is but little hard wood except in the first two or three hundred feet where it has almost all been cut out, and but little *jelotong*. We saw no taban of any kind. The stemless palms are by no means numerous and the forest generally is dry and with but little undergrowth.

On the Eastern side above about 1,800 feet where timber cutting ceases, the character of the forest changes and on the ridges great numbers of orchids begin to appear. Conifers, *Agathis*, *Dacrydium* (spp.) and *Podocarpus* are abundant and large shrubby *Rhododendrons* with salmon, lemon-yellow and white flowers begin to show themselves. In the damper hollows and among rocks near the streams a scarlet *Balanophora* was very abundant. Many of the ridges and flatter areas from 2,500 feet to the summit were clothed with a zerophitic vegetation, amongst which *Boeckia frutescens*, *Tristania*, *Leptospermum* and *Vaccinium* were the commonest shrubs, while in damp hollows amongst the rocks and amongst the coarse grasses and sedges that covered the more open spaces *Burmannia longifolia*,

a Purple and a Yellow *Utricularia* and two species of *Xyris* were very conspicuous. Melastomaceous plants and Begonias, in contradistinction to the flora of the Perak main range, were by no means common and only two or three species of ginger-works were met with. We did not see a single tree fern.

Collections were made in all groups of the animal kingdom and rather over two hundred species of flowering plants were obtained amongst which was an unusually large proportion of orchids. Very many species however were not in flower or in fruit at the time of our visit and it was therefore impossible to obtain identifiable specimens. This was especially the case among the *Gesneraceae*, of which about a dozen species were noted.

Animal life was extraordinarily poor, not only in species but also in individuals, and the only group represented by large numbers of specimens is the Lepidoptera Heterocera, of which considerable series were obtained by the use of a Lux lamp at night. In other groups the Millipedes were perhaps most abundant, though the number of species was not large. All orders of day flying insects were extremely scarce.

The most interesting capture of the trip was a specimen of *Eoperipatus* secured by a collector belonging to Dr. R. Hanitsch of the Raffles Museum, Singapore, who accompanied us. A single specimen was obtained in rotten wood at about 2,900 ft: though diligently searched for by ten other collectors for a day no other specimens were met with. The collections as worked out will be published group by group in this Journal. In the present number lists are given of the vertebrates.

Owing to the fact that there is now a railway station at its eastern foot, Kedah Peak has become very accessible and it is one of the easiest mountains to ascend that we have visited. From a practical point of view perhaps the most interesting feature attaching to it is that at about 3,300 ft. there exists a far better site for several hill bungalows than we know of at any similar altitude in the Peninsula.

The ascent from Gurun Station to Padang 'toh Seh, 3,200 ft., takes about three hours and the return journey about half that time. For the first two thousand feet the going is excellent in dry weather, a smooth and broad track having been formed by the extraction of baulks of timber drawn by buffalo, but as the subsoil is clayey this road becomes very slippery after rain though it is nowhere steep.

Between 1,500 ft. and 2,500 ft. there are an unusual number of flat spaces or slightly rounded ridges such as we have noted nowhere else and to this altitude the forest is open, with but little undergrowth.

Padang 'toh Seh is an open, somewhat rocky area (with abundant water near by) in a shallow gully between the actual summit and a ridge to the north. It is on the main track which continues westward and shortly beyond the Padang falls

steeply towards the sea, and is about 100 yards beyond the point where the path leading to the actual summit of the Peak branches off to the left.

The building site which lies N.W. beyond the Padang and four or five minutes distant, consists of a long, slightly undulating ridge running east and west, gently rounded from side to side, in some places flat, and varying in width from one to two hundred yards. It is covered with grasses, etc., pitcher-plants and orchids and is dotted throughout with bushes, (*Boeckia*, *Leptospermum*, *Vaccinium*, *Rhododendron* and heaths), of a general height of 3-10 ft. but on several of the highest points of the ridge where the soil is deeper some of these become small trees growing in clumps with a height of 15-20 ft. and afford a welcome broken shade on a fine day. Golden-flowered *Xyris* and a pretty free-blossoming pink *Argostemma* give colour to the herbage, while everywhere the growth is so open that charming views can be obtained in many directions and if a certain amount of clearing were done the whole surrounding sea and land could be seen except in the section SE-SW.

Roughly, that portion of the horizon is obscured by the secondary summit of the mountain, seen from the site, a steep-sided ridge running parallel to the southward, thickly wooded and rising 500 ft. higher. Seaward this drops sharply for 100 ft. and then descends more gently to become a narrow *arrête* which rises again to a lower peak in the S.W. and screens the island of Penang from view. Landward this summit drops more gently, the path to the Peak running near its profile, while across its base the inland plains and distant hills can be seen.

The prospect eastwards is closed by the continuation of the ridge from which these views are recorded but to the northward can be seen the wide-spreading plain under rice cultivation stretching right away to the hills of Perlis and bordered by the sea. Through this can be traced the railway to Alor Star and the town itself can be picked up with beyond it, the most conspicuous of all features, the precipitous mass of Gunong Keriang. The islands of Terutau and Langkawi lie clear on the horizon and running south in a long curve is the sea-shore with the mouth of the Kedah River jutting out in the centre, Pulau Paya is in the middle distance and the wooded islets of the Bunting group with their glistening yellow beaches are strung out in a line nearer in; while only about four miles away lie the village and fruit-groves of Yen, the mouth of its stream being marked by a long grove of cocopalms. Sails, and even canoes at sea, can be seen quite clearly.

The open portion of the ridge, on which the soil is very shallow and peaty and where numerous outcrops of sand-stone and quartzite occur, is some 7-800 yards long and is only fit for building purposes: inland, however, where the forest grows, the soil is much deeper and richer and the surface being rounded

and even flat, a considerable area is provided which is suitable for vegetable gardens with little need for terracing. Through the woods of the ridge a path runs more or less northwards and having a gentle slope affords a pleasant walk.

In all about 20 acres would be available for building while about half that area could be cleared of forest for gardening and cow-keeping.

There appears to be an ample supply of water all the year round in the gully. Though a few mosquitoes occur at night no *Anopheles* were included in the collection made.

The higher ridge near the summit has also some extent of flattish land but this is much smaller than the area available at the lower site and there would be a difficulty about water: also a good deal of cloud or mist is generally present so that the slightly lower temperature ($\pm 2^{\circ}$) due to an extra height of 4-500 ft. would not counter-balance the greater area and convenience of the other locality.

Quite close to this is the actual summit which is reached in about 50 minutes from Padang 'toh Seh: from it there is a clear view in all directions, including Penang and its shipping, the Muda River and the Larut Hills.

II.—MAMMALS.

The mammal fauna of Kedah Peak appears to be very poor. This is due to the fact that the mountain has never had any connection with the main range of the Peninsula while uncongenial conditions have as usual prevented the upward spread of the lowland forms. By far the most interesting of the few animals obtained were *Hylomys suillus*, *Epimys ferreocanus* and *Chiropodomys gliroides*.

Besides the species recorded below there were observed a tiger, binturong and some small bats, but none of these were obtained. Fresh tracks of tapir were frequently met with just below the summit and the goat-antelope is reported to inhabit some of the peaks, while the cries of a species of gibbon and leaf monkey were heard from the lower slopes.

I. SCIURUS VITTATUS MINIATUS.

Sciurus notatus miniatus, Miller, Proc. Acad. Nat. Sci., Washington, II, p. 79 (1900).

3 Males.

Three very typical specimens in which the red pencil of the tail extends nearly half-way towards the base.

Not at all common on the higher slopes of the mountain.

2. SCIURUS TENUIS SURDUS.

Sciurus tenuis surdus, Miller, Proc. Acad. Nat. Sci., Washington, II, p. 80 (1900).

3 Males, 7 Females.

By far the commonest squirrel on the mountain and not differing in any way from lowland animals: in no way approaching our recently described *S. t. gunong* from the Bandon hills [Journ. F.M.S. Mus., V. p. 119 (1914).]

3. EPIMYS VOCIFERANS.

Mus vociferans, Miller, Proc. Biol. Soc., Washington, xiii. p. 198 (1900), pls iii and iv, fig. 3.

2 Females.

Only two examples of this generally common hill rat were trapped.

4. EPIMYS SURIFER.

Mus surifer, Miller, Proc. Biol. Soc., Washington, xiii, p. 148 (1900), pl. v, fig. 4, a, b, c.

2 Males, 2 Females.

Four examples of this, the commonest spiny rat in the Peninsula, were obtained: the pelage of all is somewhat pale and dull.

5. EPIMYS CREMORIVENTER.

Mus cremoriventer, Miller, Proc. Biol. Soc. Washington, xiii, p. 144 (1900), pl. v, fig. 2, a, b, c.

1 Male, 1 Female.

This little rat has always been found sparsely distributed in the mountains of the Peninsula and only two individuals were obtained on the present occasion.

6. EPIMYS ASPER.

Mus asper, Miller, Proc. Biol. Soc. Washington, xiii, p. 145 (1900), pl. v, fig. 3, a, b, c.

22 Males, 8 Females.

This species was extremely common. It was found, here as elsewhere, to vary considerably in brightness of colouration, the yellow tone of the upper surface ranging from bright ochraceous-tawny to pale clay. The grey under surface is sometimes suffused with ochraceous but this feature is in no way correlated with a brighter back.

7. EPIMYS JALORENSIS.

Mus jalorensis, Bonhote, Fasciculi Malayenses, Zoology, Pt. I, p. 28 (1903), pl. ii, figs 1 and 2; pl. iv. fig. 4.

3 Males, 2 Females.

These are representatives of the common *rattus* of the Malay subregion and though we have used for it the name applied by Bonhote we doubt, when large series of Malayan and Bornean animals are compared, that it will be considered in any way distinct from the subspecies *neglectus* of that island.

7. CHIROPODOMYS GLIROIDES.

Mus gliroides, Blyth, Journ. Asiat. Soc. Bengal, xxiv, p. 721 (1855).

3 Males, 1 Female.

Of this charming little rodent four individuals were obtained which were taken in the hollow internodes of bamboos. It was represented in our Museum hitherto by five examples only and we had regarded it as a species of rare occurrence in our area, but this scarcity in collections is possibly rather due to reasons of habitat and habit.

9. TUPAIA GLIS WILKINSONI.

Tupaia ferruginea wilkinsoni, Robinson and Kloss, Journ. F.M.S. Mus, iv, p. 173 (1911).

1 Male, 1 Female.

These are rather dull coloured examples of this subspecies, the rump showing very little ferruginous tint; thus approaching, in its little-varied upper surface, the northern species *T. belangeri*.

10. HYLOMYS SUILLUS.

Hylomys suillus, Mull. and Schleg., Verhandelingen p. 153 (1839-44) pl. 25, figs. 4-7, pl. 26, fig. 1.

Though generally included as a member of our fauna this species seems to have been first definitely recorded from the Peninsula by Robinson whose collectors obtained an individual from the mountains of Selangor in 1910 [Journ. F.M.S. Mus. IV. p. 223 (1911)]. Several examples have since been captured in Perlis, the state north of Kedah, and now we have these two examples from Kedah Peak. We have compared them with animals from Sumatra (type region) and can discover no differences.

III. BIRDS.

We are aware of no paper dealing exclusively with the avifauna of the State of Kedah, nor indeed to our knowledge have any but very inconsiderable collections been made therein. A few species obtained by Cantor are mentioned by Moore in his "List of Malayan Birds collected by Theodore Cantor, M.D.," *P. Z. S.* 1854, pp. 258-285; 1859 pp. 443-468, while others obtained by the "Skeat Expedition" in 1899 are listed by *Bonhote, P. Z. S.* 1901 (i) pp. 57-81. To the east the avifauna of the Patani States is well known, that of Province Wellesley, Penang and Perak to the South and South-east has been thoroughly worked out, while to the north considerable collections have been obtained from the small boundary state of Perlis by the collectors of the Federated Malay States Museum, which disclose nothing of special interest.

To the north-east the fauna of Senggora is known from collections obtained by the "Skeat Expedition," which disclose no material difference between it and Patani and Jalor,

which was extensively worked by one of us. From the nature of the terrain it was not therefore probable that Kedah as a whole would disclose any form of special interest, but it was thought possible that Kedah Peak, rising as it does to a height of approximately 4,000 feet, might harbour some of the mountain species that are known from the main range mountains of the Federated Malay States to the south and from the mountains of Trang and Bandon to the North and North East. Moreover it was desirable to ascertain, whether the faunal boundary separating purely Malayan species from Tenasserimese races passed to the north or south of the peak.

With this object in view the mountain on its higher levels from the summit to about 2,500 feet was exhaustively searched from November 29th to December 11th, by three trained Dyak Collectors, well acquainted with the local fauna, and we do not think that they are likely to have missed any species really resident on the hill at the time.

As a result the hill was found to be extraordinarily barren in bird life, both species and individuals being very scarce, the only forms at all common being *Aethopyga temmincki*, *Turdinus magnirostris* and *Hemixus cinerea*.

The results conclusively show that Kedah Peak has never been connected either with the Trang mountains or those of the main range in such a manner as to permit the passage of the fauna of these two districts to it. The tradition in Malay Legend that until comparatively recent times the Peak was an island has probably therefore some foundation in geological fact.

Besides the specimens actually listed, three species of hornbills were seen and numerous individuals of a large *Spizaetus*, probably the black form of *Sp. limnaetus*, but these have no bearing on the general conclusions. No game birds were seen or heard nor did pigeons of any kind occur on the peak, though *Carpophaga badia* is usually found on mountains of this elevation. Round the summit *Hirundo javanica* and *H. gutturalis*, *Chaetura gigantea* and *Ch. leucopygialis* were noted, but no species of *Collocalia*.

The rarest and most interesting acquisition was *Prionochilus thoracicus*, of which but few specimens have ever been obtained in the Malay Peninsula, while *Anthus maculatus* and *Cichloselys sibericus* are rare seasonal visitors. The specimens obtained have been listed in detail but it has not been thought necessary to give any extensive references to the local literature. Occurrence to the north in Trang and Bandon have, however, usually been quoted.

RALLINA SUPERCILIARIS (Eyton).

Rallina superciliaris (Eyton); *Sharpe, Cat. Birds Brit. Mus. xxiii*, p. 76 (1894) *Robinson & Kloss, Ibis*, 1911, p. 10.

a. 1 Female imm. Kedah Peak, 3,000 ft. 30th November, 1915. No. 2,112. "Iris orange, bill dark slate, sea

February, 1916.

green at base of lower mandible, feet Payne's grey." H.C.R. & C.B.K.

This bird is quite immature and has the head earthy brown, uniform with the mantle. From the relative lengths of the tarsi and toes it would appear to be referable to this species and not to *Limnobaenus paykulli*, from which it is somewhat difficult to distinguish young birds.

ACCIPITER AFFINIS, Gurney.

Accipiter affinis, Gurney; *Robinson, Ibis*, 1915, p. 728.

a. 1 Male imm. Kedah Peak, 3,950 ft. 2nd December, 1915. [No. 2,142.] "Iris lemon yellow, bill slate, black on culmen, greenish yellow on cere and gape, tarsi, greenish yellow, toes more yellow." [H.C.R. & C.B.K.]

This specimen, which is in immature plumage, agrees well with Kloss' specimens from S. E. Siam. Total length, 270; wing, 158, tail, 128, tarsus, 45 bill from gape, 18 mm.

Several of these little hawks frequented the cliffs at the summit of the peak and hunted the Spine-tailed and common swifts that were common there, though they never seemed to be successful.

SCOPS MALAYANA, Hay.

Scops malayana, Hay; *Sharpe, Cat. Birds Brit. Mus.* ii, p. 58 (1875); *Robinson & Kloss, Ibis*, 1911, p. 31.

a. 1 Female. Kedah Peak, 3,000 ft. 5th December, 1915. [No. 2,181.]

"Iris chrome, bill horn, darker at tip, yellowish beneath, feet dirty whitish, yellowish on soles." H.C.R. & C.B.K.

This owl, whose soft hoot was heard on two or three nights, appears to be commoner in the northern half of the Peninsula than in the south, where very few specimens have been obtained.

CYPSELUS PACIFICUS (Lath.).

Cypselus pacificus (Lath.); *Robinson, Journ. Fed. Malay States Mus.* ii, p. 175, (1909).

a. 1 Male. Summit of Kedah Peak, 3,978 ft. 4th December, 1915. [No. 2,167.]

? Iris dark, bill black, feet pinkish black." [H.C.R. & C.B.K.]

In considerable numbers flying round and over the cliffs at the summit.

PYROTROGON ORESCIUS (Temm.).

Pyrotrogon orescius (Temm.); *Robinson & Kloss, Ibis*, 1911, p. 39; *Robinson, Journ. Fed. Malay States Mus.* v, p. 92 (1914).

a. b. 2 Females. Kedah Peak, 3,000 ft. 2—5th December 1915. [Nos. 2,141, 2,185.]

"Iris greyish-purple, bill and orbital skin smalt, culmen black, feet pale lead, soles pink." [H.C.R. & C.B.K.]

Not common on the hill. More abundant generally in the northern parts of the Peninsula than further south.

ZANCLOSTOMUS JAVANICUS (Horsf.).

Zanclostomus javanicus (Horsf.); *Shelley, Cat. Birds Brit. Mus.* xix, p. 370 (1891); *Robinson & Kloss, Ibis*, 1911, p. 42; *Robinson, Journ. Fed. Malay States Mus.* v, p. 94 (1914).

a.-d. 4 Males. Kedah Peak, 3,000 ft. 29th November—5th December, 1915. [Nos. 2,106, 2,168, 2,170, 2,172.]

"Iris claret, orbital skin smalt, bill coral, feet Payne's grey, soles dirty yellow." [H.C.R. & C.B.K.]

Very common, climbing about the trees in the laboured way peculiar to this group of Cuckoos. Widely spread throughout the Peninsula, ascending the hills to over 4,000 ft.

ALSEONAX LATIROSTRIS (Raffles).

Alseonax latirostris (Raffles); *Sharpe, Cat. Birds Brit. Mus.* iv, p. 127 (1879); *Robinson & Kloss, Ibis*, 1911, p. 51 Male.

a. 1 Female. Kedah Peak, 3,000 ft. 3rd December 1915. [No. 2,151.]

"Iris dark hazel, bill dark horn, basal half of lower mandible yellowish white, feet brownish grey." [H.C.R. & C.B.K.]

CYORNIS CONCRETA (S. Mull.).

Pachycephala cyanea (Hume); *Gadow, Cat. Birds Brit. Mus.* viii, p. 224 (1883).

Cyornis concreta (S. Mull.); *Hartert, Nov. Zool.* ix, p. 549 (1902); *Robinson, Journ. Fed. Malay States Mus.* v, p. 25 (1914).

a, b. 2 Males. Kedah Peak, 3,000 ft. 30th November—3rd December, 1915. [Nos. 2,108, 2,148.]

"Iris dark hazel, bill black, feet greyish black." [H.C.R. & C.B.K.]

Of late years this anomalous flycatcher has been found on most of the mountains of the Malay Peninsula from about 1,000 ft. to 3,500 ft. It is, however, nowhere common.

POLIOMYIAS LUTEOLA (Pall.).

Poliomyias luteola (Pall.); *Sharpe, Cat. Birds Brit. Mus.* iv, p. 201 (1879).

a. 1 Female. Kedah Peak, 3,000 ft. 6th December 1915. [No. 2,189.]

"Iris dark, bill corneous, feet greenish brown." [H.C.R. & C.B.K.]

A migrant, widely distributed throughout the Malay Peninsula, especially on the islands off the coast from September to May.

PHILENTOMA PYRRHOPTERUM (Temm.).

Philentoma pyrrhopterum (Temm.); *Sharpe, Cat. Birds Brit. Mus.* iv, p. 366 (1879); *Robinson & Kloss, Ibis*, 1911, p. 53; *Robinson, Journ. Fed. Malay States Mus.* v, p. 100 (1914).

a, b. 1 Male, 1 Female. Kedah Peak, 3,000 ft. 9th December 1915. [Nos. 2,219—20.]

“Male: iris red, bill black, feet lavender. Female: iris red, bill pale horn, whitish at gape, feet pale brown.” [H.C.R. & C.B.K.]

Widely distributed all over the Peninsula, commoner in the more northern districts.

RHINOMYIAS PECTORALIS (Salvad.).

Rhinomyias pectoralis (Salvad.); *Sharpe, Cat. Birds Brit. Mus.* iv, p. 368 (1879); *Hartert, Nov. Zool.* ix, p. 553 (1902).

a—b. 1 Male, 1 Female. Kedah Peak, 3,000 ft. 2—5th December 1915. [Nos. 2,146, 2,184.]

“Iris hazel, bill black, feet livid purplish pink.” [H.C.R. & C.B.K.]

Not very common anywhere but found at medium elevations throughout the Peninsula.

CHLOROPSIS ICTEROCEPHALA (Less.).

Chloropsis icterocephala (Less.); *Sharpe, Cat. Birds Brit. Mus.* vi, p. 30 (1881).

a—f. 4 Males, 2 Females. Kedah Peak, 3,000 ft. 3rd—8th December 1915. [Nos. 2,155, 2,175, 2,182, 2,197, 2,209—10.]

Male: iris rich hazel brown, bill black, feet greenish lead. Female: iris chestnut, bill slate, greenish slate on lower mandible, feet pale greenish plumbeous.” [H.C.R. & C.B.K.]

Fairly common on the peak, which is nearly the northern limit of the species. The form occurring in Trang and Bandon is *C. chlorocephala*, while birds from Perlis immediately to the north of Kedah are intermediate.

HEMIXUS CINEREUS (Blyth).

Hemixus cinereus (Blyth); *Sharpe, Cat. Birds Brit. Mus.* vi, p. 52, pl. 11 (1881).

a—h. 8 Males. Kedah Peak, 3,000 ft. 29th November—7th December 1915. [Nos. 2,103—4, 2,138, 2,147, 2,165—6, 2,198, 2,201.]

“Iris red or chocolate, bill black, feet greyish brown, soles yellowish flesh. Common everywhere on the hill in parties of two or three.

Several of the specimens have the undertail coverts faintly washed with greenish, which is apparently an indication of immaturity.

HEMIXUS MALACCENSIS (Blyth).

Hemixus malaccensis (Blyth); *Sharpe, Cat. Birds Brit. Mus.* vi, p. 52 (1881); *Robinson and Kloss, Ibis*, 1911, p. 56; *Robinson, Journ. Fed. Malay. States Mus.* v, p. 102 (1914).

a-c. 1 Male, 2 Females. Kedah Peak, 3,000 ft. 30th November—9th December 1915. [Nos. 2,113, 2,132, 2,217.]

"Iris chocolate, orange, or ochraceous, bill dark greenish slate, brownish on lower mandible, feet pinkish brown." [H.C.R. & C.B.K.]

Widely spread in the Peninsula in the same situations as the preceding species but not so common or conspicuous a bird.

CRINIGER TEPHROGENYS (Jard. and Selby).

Criniger tephrogenys (Jard. and Selby); *Hartert. Nov. Zool.* ix, p. 558 (1902);

a-e. 2 Males, 1 Female. Kedah peak, 3,000 ft. 7-9th December 1915. [Nos. 2,200, 2,215-6.]

"Iris reddish brown, bill slate, black on culmen, feet yellowish pink." [H.C.R. & C.B.K.]

This is the yellowish low-country and southern form not *C. ochraceus*, Moore, which occurs further north and in the mountains of the southern part of the Peninsula above about 3,000 ft.

PYCNONOTUS SIMPLEX, Less.

Pycnonotus simplex, Lesson; *Sharpe, Cat. Birds Brit. Mus.* vi, p. 153 (1881).

a-e. 2 Males, 3 Females. Kedah Peak, 3,000 ft. 3-7th December 1915. [Nos. 2,149, 2,159-60, 2,194, 2,203.]

"Iris white, bill black or dark horn, feet pinkish brown." [H.C.R. & C.B.K.] Agreeing well with other specimens from the southern parts of the Peninsula in having the ear-coverts entirely unstreaked therein differing from the more northern form *P. robinsoni*, Ogilvie Grant. Wing 86-76 mm.

There is considerable doubt as to the proper name to be applied to this bulbul which can probably be divided into numerous local races. Pending a general investigation of the whole group we have adopted that generally used by English authors.

RUBIGULA CYANIVENTRIS (Blyth).

Rubigula cyaniventris (Blyth); *Sharpe, Cat. Birds Brit. Mus.* vi, p. 169 (1881); *Robinson, Journ. Fed. Malay States Mus.* ii, p. 196 (1909).

a. 1. Male. Kedah Peak, 3000 ft. November 30th 1915. [No. 2,120.]

"Iris dark blue, bill black, feet pale slate." [H.C.R. & C.B.K.]

The only one met with. Common all over the Peninsula up to 3,000 ft.

TURDINUS MAGNIROSTRIS (Moore).

Turdinus magnirostris (Moore); *Sharpe, Cat. Birds Brit. Mus.* vii, p. 547 (1883); *Robinson, Journ. Fed. Malay States Mus.* v, p. 103 (1914).

a—k. 7 Males, 4 Females. Kedah Peak, 3,000 ft. 30th November—6th December, 1915.

Nos. 2,109–10, 2,124–7, 2,130–1, 2,154, 2,158, 2,193.

“Iris carmine, brick-red or Indian red, bill slate, the culmen black, feet pale lavender.” [H.C.R. & C.B.K.]

One of the commonest of submontane birds met with in small trees and low bushes in the undergrowth. It is one of the few Timeline birds that is at all common on the islands off the Peninsular coast.

ANUOPSIS MALACCENSIS (Hartl.)

Anuopsis malaccensis (Hartl.); *Sharpe, Cat. Birds Brit. Mus.* vii, p. 588 (1883).

a—d. 2 Males, 2 Females. Kedah Peak, 3,000 ft. 29th November—2nd December, 1915. [Nos. 2,100, 2,107, 2,143–4.]

“Iris red or chestnut, bill slate, black on culmen, feet fleshy pink.” [H.C.R. & C.B.K.]

A common scrub bird ranging in altitude to about 3,000 feet but not extending much further north than Trang.

CORYTHOCICHLA LEUCOSTICTA, Sharpe.

Corythocichla leucosticta, *Sharpe, P.Z.S.* 1887, p. 438; *Robinson & Kloss, Ibis*, 1911, p. 61; *Robinson, Journ. Fed. Malay States Mus.* v, p. 104 (1914).

a. 1 Male. Kedah Peak, 3,000 ft. 29th November, 1915. [No. 2,099.]

“Iris carmine, bill bluish horn, blackish at base, feet greyish brown.” [H.C.R. & C.B.K.]

It was somewhat surprising to meet this short-tailed Babbler on Kedah Peak, where none of the other species with which it is usually associated occur. Of late years it has, however been met with in several other outlying situations notably on Gunong Tampin in Negri Sembilan and on Pulau Tioman off the coast of Pahang.

ALCIPPE CINEREA, Blyth.

Alcippe cinerea, Blyth; *Sharpe, Cat. Birds Brit. Mus.* vii, p. 622 (1883); *Robinson & Kloss, Ibis*, 1911, p. 61; *Robinson, Journ. Fed. Malay States Mus.* v, p. 105 (1914).

a—h. 6 Males, 2 Females. Kedah Peak, 3,000 ft. 1st–9th December, 1915. Nos. 2,128, 2,183, 2,191–2, 2,206–8, 2,218.

"Iris reddish hazel, bill dark horn, tomia and gape paler, feet pinkish slate." [H.C.R. & C.B.K.]

Common everywhere on the lower hills of the Peninsula as far North as Bandon, but more numerous in the South.

STACHYRHIS NIGRICEPS subsp. DAVISONI, Sharpe.

Stachyrhis davisoni, Sharpe, *Bull. Brit. Orn. Club*, i, p. vii, (1892); *Robinson & Kloss, Ibis*, 1911, p. 61; *Robinson, Journ. Fed. Malay States Mus.* v, p. 105 (1914).

Stachyrhis nigriceps davisoni, *Harington, Journ. Nat. Hist. Soc. Bombay*, xxiii, p. 625 (1915).

a—c. 3 Females. Kedah Peak, 3,000 ft. 30th November—4th December, 1915. [Nos. 2,123, 2,161-2.]

"Iris pale hazel, chestnut or chocolate, bill slate, the culmen black, feet greyish brown with a greenish cast." [H.C.R. & C.B.K.]

On low trees and shrubs, fairly common. Apparently ranging from the extreme south of the Peninsula northwards to Karen-nee. The above specimens exactly agree with topotypes from the Tahan River with which they have been compared.

HERPORNIS ZANTHOLEUCA (Hodgs).

Herpornis zantholeuca (Hodgs): *Sharpe, Cat. Birds, Brit. Mus.* vii, p. 636 (1883); *Robinson & Kloss, Ibis*, 1911 p. 63; *Robinson, Journ. Fed. Malay States Mus.* v, p. 107 (1914).

a—i. 6 Males, 3 Females. Kedah Peak, 3,000 ft. 3rd-9th December, 1915. [Nos. 2,152, 2,157, 2,169, 2,173-4, 2,196, 2,199, 2,205, 2,221.]

"Iris dark brown or hazel, bill pinkish horn, feet yellowish pink. [H.C.R. & C.B.K.]

A very common and characteristic submontane bird, not found as a rule above 3,500 ft. or at low elevations near the coast.

CICHLOSELYS SIBERICUS (Pall).

Cichloselys sibericus (Pall); *Robinson, Journ. Fed. Malay States Mus.* ii, p. 206 (1909).

a—c. 3 Females. Kedah peak, 3,000 ft. 29th November—2nd December, 1915. [Nos. 2,098, 2,105, 2,140.]

"Iris dark hazel, bill black, yellowish green on base of lower mandible, yellow at the gape, tarsi and feet brownish yellow, more yellow posteriorly and on the soles." [H.C.R. & C.B.K.]

A migrant found during the winter months on several of the higher mountains of the Peninsula.

HYDROCICHLA RUFICAPILLA (Temm).

Hydrocichla ruficapilla (Temm); *Sharpe, Cat. Birds Brit. Mus.* vii, p. 319 (1885); *Robinson Journ. Fed. Malay States Mus.* ii, p. 207 (1909).

a. 1 Male. Kedah peak, 3,000 ft. 2nd December 1915, [No. 2, 139.]

"Iris dark hazel, bill black, feet pale whitish pink." [H.C.R. & C.B.K.]

Not common. Elsewhere in the Peninsula it is abundant on mountain streams up to about 3,500 feet.

LARVIVORA CYANEA (Pall).

Larvivora cyanea (Pall); *Robinson, Journ. Fed. Malay States Mus.* ii, p. 207 (1909); *id. op. cit.* v, p. 149 (1914); *Robinson & Kloss, Ibis* 1911, p. 64.

a—b. 2 Females. Kedah Peak, 3,000 ft. 5th December 1915. [Nos. 2, 176, 2, 178.]

"Iris hazel, upper mandible horn, lower pinkish, tarsi and feet pale pinkish white." [H.C.R. & C.B.K.]

Common throughout the Peninsula in the winter months, though possibly some few individuals remain throughout the year as it has been obtained as late as May 16th.

ORTHOTOMUS ATRIGULARIS (Temm).

Orthotomus atrigularis (Temm); *Sharpe, Cat. Birds Brit. Mus.* vii, p. 220 (1883); *Robinson, Journ. Fed. Malay States Mus.* ii, p. 208 (1909).

a—b. 2 Males. Kedah Peak, 3,000 ft. 2-3rd December 1915. [Nos. 2, 145, 2, 156.]

"Iris brown or hazel red, bill pinkish horn, darker on culmen, feet brownish pink." [H.C.R. & C.B.K.]

Here reaching about its maximum elevation. Common about low bushes in the clearing.

PHYLLOSCOPUS BOREALIS subsp. BOREALIS (Blas).

Phylloscopus borealis borealis, *Hartert, Vog. Pal. Faun.* I. 1909, p. 517; *Robinson, Ibis*, 1915, p. 754.

a—h. 5 Males, 3 Females. Kedah Peak, 3,000 ft. 29th November—9th December, 1915. [Nos. 2, 101-2, 2, 150, 2, 153, 2, 180, 2, 188, 2, 204, 2, 213.]

"Iris hazel, bill yellowish, upper mandible and tip brownish horn, feet brownish, yellowish posteriorly." [H.C.R. & C.B.K.]

A very common winter visitor to the Malay Peninsula. All these specimens are in worn and faded plumage and are difficult to make out. The wing measurement varies from about 63-67 mm. so they cannot be referred to the larger eastern race *P. b. zanthodryas*, Swinh.

MELANOCHLORA FLAVOCRISTATA (Lafr).

Melanochlora flavocristata (Lafr.); *Robinson and Kloss, Ibis*, 1911, p. 70; *Robinson, Journ. Fed. Malay States Mus.* v, p. 108 (1914).

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a—b. 2 Males. Kedah Peak, 3,000 ft. 5th December, 1915. [Nos. 2,177, 2,179.]

"Iris hazel, bill black, feet greenish slate." [H.C.R. & C.B.K.]

One flock only was met with; elsewhere the species is numerous, throughout the submontane tracts of the Peninsula.

MOTACILLA MELANOPE, Pall.

Motacilla melanope, Pall.; *Sharpe, Cat. Birds Brit. Mus.* x, p. 497 (1895); *Robinson and Kloss, Ibis*, 1911, p. 73.

a. 1 Female. Kedah Peak, 3,000 ft. 9th December 1915. [No. 2214.]

"Iris dark, bill bluish slate, darker on culmen, feet pale brownish." [H.C.R. & C.B.K.]

The only one seen, though this wagtail is usually common on forest paths up to a considerable altitude during the winter months.

ANTHUS MACULATUS, Hodgs.

Anthus maculatus, Hodgs.; *Sharpe, Cat. Birds Brit. Mus.* x, p. 547 (1885); *Robinson and Kloss, Ibis*, 1911, p. 478.

a. 1 Female. Kedah Peak, 3,000 ft. 30th November, 1915. [No. 2,117.]

"Iris dark, upper mandible horn, lower pink, feet whitish pink." [H.C.R. & C.B.K.]

A rare winter visitor to the Malay Peninsula, only two other records of its occurrence being to hand.

AETHOPYGA TEMMINCKI (S. Müll.)

Aethopyga temmincki (S. Müll.); *Gadow, Cat. Birds Brit. Mus.* ix, p. 16 (1884).

a—l. 10 Male ad., 1 Male imm, 1 Female. Kedah Peak, 3,000 ft. 29th November—9th December 1915. [Nos. 2,111-2, 2,111a., 2,114-5, 2,122, 2,129, 2,171, 2,186-7, 2,195, 2,211-2.]

"Iris dark, feet reddish brown, bill brownish horn" [H.C.R. & C.B.K.]

Exceedingly common in open spaces at 500 feet, and over, together with the Flowerpeckers.

This is a very characteristic submontane bird inhabiting the zone between about 500 ft. and 3,000 ft. In the coast lands it is replaced by *Ae. siparaja* and *Ae. s. cara* and on the higher mountains by *Ae. wrayi*, Sharpe.

The present species has a pleasant though feeble little song and is very active and restless in its movements. On Kedah Peak females were curiously scarce and hardly any were seen.

DICAENUM TRIGONOSTIGMA (Scop.)

Dicaeum trigonostigma (Scop.); *Sharpe, Cat. Birds Brit. Mus.* x, p. 38 (1885).

a—f. 5 Males, 1 Female. Kedah Peak, 3,000 ft. 30th November—8th December 1915. [Nos. 2,118-9, 2,133-4, 2,137, 2,202.]

“Male: iris dark, bill greenish slate, paler at the base of the lower mandible, feet dark slaty green. Female: iris dark, bill pale orange, culmen and tip horn brown, feet dark green slate.” [H.C.R. & C.B.K.]

Common on flowering trees in open spaces near our camp.

Abundant everywhere in the Peninsula up to about 3,500 ft.

PRIONOCHILUS IGNICAPILLUS (Eyton).

Prionochilus ignicapillus (Eyton); *Sharpe, Cat. Birds Brit. Mus.* x, p. 65 (1885).

a—b. 2 Males. Kedah Peak, 3,000 ft. 4th December, 1915. Nos. 2163-4.

“Bill black, iris chestnut, feet slaty black, lower mandible slate except at tip.” [H.C.R. & C.B.K.]

Not very common on Kedah Peak. Sparsely distributed throughout the Peninsula, attaining about 3,000 ft. as its maximum elevation.

PRIONOCHILUS MACULATUS (Temm.).

Prionochilus maculatus (Temm.); *Sharpe, Cat. Birds Brit. Mus.* x, p. 69 (1885).

a. 1 Female. Kedah Peak, 3,000 ft. 6th December, 1915. [No. 2,190.]

b. 1 Male. Gurun, Kedah 50 ft. 13th December, 1915. [No. 2,252.]

“Iris chestnut, bill slate, the culmen black, feet dark greenish slate.” (H.C.R. & C.B.K.)

Not so common as others of the family but very generally distributed over the whole length of the Peninsula, from Bandon to Singapore.

PRIONOCHILUS THORACICUS (Temm.).

Prionochilus thoracicus, *Sharpe, Cat. Birds Brit. Mus.* x, p. 67 (1885); *Ogilvie Grant, Journ. Fed. Malay States Mus.* iii, p. 19 (1909); *Robinson, Journ. Straits Branch. Roy. Asiat. Soc.* No. 57, p. 14 (1911).

a—c. 3 Male. Kedah Peak, 3,000 ft. 30th November—1st December, 1915. [Nos. 2,121, 2,135-6.]

“Iris dark, bill black, feet greenish slate.” [H.C.R. & C.B.K.]

This bird was found singly feeding on the flowers of a small species of *Eugenia* growing in open tracts on the mountain. Though very common in Borneo it is one of the rarest of Peninsular birds and of late years has been met with on only two occasions, once on Gunong Tahan at 3,000 ft. and again at Temengoh, in Upper Perak, at low elevations.

IV. REPTILES and BATRACHIANS.

As with the other vertebrata these appeared to be very scarce on Kedah Peak and none were obtained of any special interest excepting perhaps *Mabnia novemcarinata* which has not often been met with in the southern half of the Peninsula.

The references are to Boulenger's recent volume on the Reptilia and Batrachia of the Malay Peninsula.

1. GYMNOTACTYLUS PULCHELLUS (Gray).

Blgr. p. 36.

A young example of this beautiful gecko was obtained at 3,000 ft. Snout to vent 55 mm. Above brownish-yellow with four broad black bands on the trunk and another on the head running from the eyes round the nape, all narrowly edged with bright lemon-yellow. Rostrum and limbs brown; a narrow lemon-yellow band between, and in front of, the eyes; supra-orbital regions greenish. Tail white with nine broad black bands. Under surface deep fleshy-pink.

2. DRACO MELANOPOGON, Blgr.

Blgr. p. 62.

3 Males, 1 Female.

Evidently not uncommon on the Peak but the only flying-lizard met with.

3. APHIANOTIS FUSCA (Peters).

Blgr. p. 64.

A single specimen was obtained at 2,000 ft.

4. MABUIA NOVEMCARINATA (And).

Blgr. p. 82.

Two small examples of this lizard, rare in the Peninsula, were obtained at 3,000 ft.

Besides the foregoing scink a small lizard, probably *Lygosoma* sp. was frequently observed on the extreme summit where it lived among the grass and stones; it was, however, too rapid in movement to allow of capture.

5. TROPIDONOTUS TRIANGULIGERUS, Boie.

Blgr. p. 125.

One example from 3,000 ft. taken by the banks of a stream.

6. *COLUBER OXYCEPHALUS*, Boie.

One example from 3,000 ft. Its brilliant green colour and tail of orange black-edged scales render this a remarkably handsome snake.

7. *DENDROPHIS FORMOSUS*, Boie.

Blgr. p. 145.

One small individual from 3,000 ft.

8. *DRYOPHIS PRASINUS*, Boie.

Blgr. p. 175.

One example from 3,000 ft.

9. *LACHESIS WAGLERI* (Boie.)

Blgr. p. 218.

One specimen from 3,000 ft.

10. *RANA MACRODON*, Dum. and Bibr.

Blgr. p. 233.

An immature example of this frog was obtained at 3,000 ft, measuring 78 mm. from snout to vent.

11. *RHACOPHORUS LEUCOMYSTAX* (Gravenh).

Blgr. p. 249.

One specimen of this frog was obtained at 3,000 ft. It is the commonest of its genus in the Peninsula.

12. *BUFO ASPER*, Gravenh.

Blgr. p. 271.

Two full-grown examples from 3,000 ft.

13. *MEGALOPHRYS NASUTA* (Schleg.)

Blgr. p. 279.

A small example (snout to vent 55 mm.) was met with at 3,000 ft. Colour of body above yellowish-brown with a reddish-chocolate area covering the back, extending over the sides and forking on the nape to the eyelids.

APPENDIX.

During our stay at Alor Star previous to our ascent of Kedah Peak and at Gurun after our return, small collections were made. Few things therein were of any special interest, but a list of the species is here given for the sake of the locality.

I—MAMMALS.

1. *PRESBYTIS OBSCURA*.

Semnopithecus obscurus, Reid, P.Z.S., 1837, p. 14.

1 Female imm. Gurun, Kedah.

2. *PTEROPUS VAMPIRUS MALACCENSIS.*

Pteropus vampyrus malaccensis, K. Andersen, Ann. & Mag. Nat. Hist. (8) II, p. 363 (1902).

A single immature example of this fruit-bat was obtained at Gurun: it is a half-grown individual with a forearm of 175 mm. only.

3. *CYNOPTERUS BRACHYOTIS.*

Pachysoma brachyotis, S. Mull, Tyd. Nat. Gesch., V, pt. 1 p. 146 (1838).

2 Males, 15 Females. Gurun, Kedah.

A large number of smaller fruit bats were obtained at Gurun but those which were obviously immature were not preserved. As shown by the external measurements given below, they are undoubtedly examples of *C. b. brachyotis*.

Head and Body	...	89	—	95
Ear from orifice	...	16	—	18.
Forearm	...	60	—	65.5
3rd Metacarpal	...	39	—	44.5
Tibia	...	21.5	—	24.5 mm.

4. *TAPHOZOUS MELANOPOGON*, subsp.

Taphozorus melanopogon, Temm. Mon. Mamm., II, p. 287, p. 60, figs. 8, 9 (1835—41).

14 Males, 13 Females. Gunong Kriang, Kedah.

Gunong Kriang, 700 ft. high, is an isolated and precipitous limestone mass standing in the flat Kedah plain some miles north of Alor Star. It is penetrated by deep tunnel-like caves and in its walls are many more of a shallower nature. These latter are inhabited by large numbers of bats of this species but no others were met with.

These examples resemble all other specimens of *melanopogon* from the Malay Peninsula and adjacent islands but appear to differ from the typical race in having paler fur and wing-membranes which are almost white.

5. *SCIURUS CONCOLOR.*

Sciurus concolor, Blyth, Journ. Asiat. Soc. Bengal, XXIV, p. 474 (1855).

1 Female.

A very typical example, showing no approach to *Sc. milleri*, Robinson and Wroughton [Journ. F. M. S. Mus. IV, p. 233 (1911)] from Trang, a state to the north of Kedah.

6. *SCIURUS VITTATUS MINIATUS*, Miller.

1 Male, 2 Females.

7. EPIMYS SURIFER (Miller).

2 Males, 1 Female.

Of similar dull colour to specimens from the Peak.

8. EPIMYS ASPER (Miller.)

2 Females.

9. EPIMYS FERREOCANUS (Miller.)

Mus. ferreocanus, Miller, Proc. Biol. Soc. Washington, XIII, p. 140 (1900), pls. III and IV, figs 2, a.

2 Females.

This rare Malayan rat has hitherto been taken only on the mountains at altitudes of 3,000 ft. or so. It was therefore a surprise to find that it occurred in the plains at the foot of Kedah Peak, while it was not met with on that mountain itself.

10. GALEOPTERUS PENINSULAE, Thomas.

Galeopterus peninsulae, Thomas, Ann. and Mag. Nat. Hist. (8) 11, p. 303 (1908).

1 Male.

11. TUPAIA GLIS WILKINSONI, Robinson and Kloss.

2 Females.

Typical specimens with ferruginous rumps and thus rather brighter than the examples from the Peak.

12. TRAGULUS KANCHIL RAVUS.

Tragulus rarus, Miller, Proc. Biol. Soc. Washington, XV, p. 173 (1902).

1 Male.

The lesser Malayan mouse-deer (pelandoc), appeared to be very common at Gurun, as during our stay of a couple of days a number were brought to us by the inhabitants who, however, said they were unable to trap the napu or larger mouse-deer.

In the examples of the pelandoc which we examined the nape-stripe was a clear black, sharply margined and contrasted with the colour of the sides of the neck, and cannot quite be matched by numerous other examples from all parts of the Peninsula.

2. BIRDS.

PELARGOPSIS MALACCENSIS, Sharpe.

a. 1 Female. Gurun Kedah 50 ft. 12th December, 1915. [No. 2,237.]

"Iris dark brown, bill maroon, tip black, tarsi and orbits coral, claws dark." [H.C.R. & C.B.K.]

Precisely agreeing with southern specimens and showing no approach to the northern form, *P. g. burmanica*, Sharpe.

HALCYON PILEATA (Bodd.).

a. 1 Male. Gurun Kedah, 50ft. 14th December, 1915. [No. 2,256.]

SURNICULUS LUGUBRIS (Horsf.)

a. 1 Male. Gurun, Kedah, 50 ft. 13th December, 1915. [No. 2,254.]

"Iris dark brown, bill, feet brownish black." [H.C.R. & C.B.K.]

HIEROCOCCYX NANUS, Hume.

Hierococcyx nanus, Hume; *Shelley, Cat. Birds Brit. Mus.* xxx, p. 238 (1892); Robinson & Kloss, *Journ. Fed. Malay States Mus.* v, p. 172 (1915).

a. 1 Male. Gurun, Kedah, 50 ft. December 11th, 1915. [No. 2,224.]

"Iris very dark brown, bill greenish slate, base of upper mandible black, orbital skin and gape pale chrome, feet yellow, claws pale wax yellow. [H.C.R. & C.B.K.]

This specimen agrees well with two others in the Museums, one from the Krau River, Pahang, collected on 31st October, 1913 and another from Ginting Bidei, Selangor-Pahang border, 2,300 ft., obtained on September 30th 1914.

Measurements of the above bird taken in the flesh. Total length 281; wing 150; tail, 158; tarsus, 20; bill from gape, 30 mm.

Wing of the Krau River Bird, 146 mm. Of the Ginting Bidei one, 147 mm.

This species is extremely rare in the Malay Peninsula proper and the above three specimens are the only ones from our area of which we have any record, with the exception of the birds from Salanga or Junk Zeylon, recorded by Muller (*Journ. fur. Orn.* 1882, p. 405). It is probably commoner in Tenasserim.

RHOPODYTES DIARDI (Less.)

a. 1 Male. Gurun, Kedah, 50 ft. 13th December, 1915. [No. 2,241.]

"Iris pale blue, orbital skin crimson lake, feet dark greenish slate, bill sea green, area of nostrils bluish." [H.C.R. & C.B.K.]

CHOTORHEA VERSICOLOR (Raffles).

a-b. 2 Females. Gurun, Kedah, 50 ft. 12th December, 1915. [Nos. 2,227, 2,233.]

"Iris chestnut, bill black, slaty at base, feet greenish lead." [H.C.R. & C.B.K.]

CHRY SOPHLEGMA MALACCENSE (Lath).

a. 1 Male. Gurun, Kedah, 50 ft. 13th December, 1915. [No. 2,242.]

"Iris chestnut, upper mandible black, lower slate, feet plumbeous green." [H.C.R. & C.B.K.]

CYMBORHYNCHUS MACRORHYNCHUS (Gm.)

Cymborhynchus macrorhynchus (Gm.) Robinson, *Ibis*, 1915, p. 740.

a—b. 1 Male, 1 Female. Gurun, Kedah, 50 ft. 11–12th December, 1915. [Nos. 2,223, 2,238.]

"Iris emerald, bill robin's egg blue, lower mandible chrome yellow, except gape and tomlia, tarsi smalt grey.

Of these two specimens one has a marked white patch on the inner web of the three outer pairs of tail feathers and the other on the outermost pair only. One just received from Paku Saribas, Southern Sarawak, Borneo has no white whatever on the tail.

PITTA CYANOPTERA, Temm.

a. 1 Female. Gurun, Kedah, 50 ft. 12th December, 1915. [No. 2,232.]

"Iris hazel, bill black, pinkish yellow at gape, feet fleshy pink." [H.C.R. & C.B.K.]

HYPOTHYMIS AZUREA subsp. PROPHATA, Oberholser.

a. 1 Female. Gurun, Kedah, 50 ft. 13th December, 1915. [No. 2,251.]

"Iris dark, bill black, feet slaty black." [H.C.R. & C.B.K.]

TERPSIPHONE PARADISI subsp. AFFINIS, Blyth.

a. 1 Female imm. Gurun, Kedah, 50 ft. 12th December 1915. No. 2,229.

"Iris dull green; eye, wattle, and tarsi, smalt; bill pale lead.

Being in quite immature plumage the identification of this specimen is somewhat doubtful; it may possibly be *T. p. incii*, Gould.

PHILENTOMA VELATUM (Temm.)

a—b. 1 Male, 1 Female. Gurun, Kedah, 50 ft. 13th December, 1915. [Nos. 2,250, 2,253.]

"Iris carmine, bill and feet black." [H.C.R. & C.B.K.]

ARTAMIDES SUMATRENSIS (S. Müll).

a. 1 Male. Gurun, Kedah, 50 ft. 13th December, 1915. [No. 2,240.]

"Iris yellowish white, bill black, feet powdery black." [H.C.R. & C.B.K.]

Always a rather rare bird, but widely distributed throughout the Malay Peninsula.

CHLOROPSIS CYANOPOGON (Temm).

a—c. 2 Males, 1 Female. Gurun, Kedah, 50 ft. 14th December, 1915. [No. 2,257-9.]

EUPTILOSUS EUPTILOSUS (Jard. and Selby).

a. 1 Male. Gurun, Kedah, 50 ft. 13th December, 1915. [No. 2,248.]

"Iris red, bill black, feet slaty black." [H.C.R. & C.B.K.]

MICROTARSUS MELANOCEPHALUS (Gm).

a. 1 Female. Gurun, Kedah, 50 ft. 12th December, 1915. [No. 2,228.]

"Iris turquoise, bill black, feet dark olive brown." [H.C.R. & C.B.K.]

TRICHOLESTES CRINIGER (Blyth).

a. 1 Male. Gurun, Kedah, 50 ft. 13th December 1915. [No. 2,249.]

"Iris greyish white, bill bluish horn, feet yellowish flesh." [H.C.R. & C.B.K.]

PELLORNEUM SUBOCHRACEUM, Swinh.

a. 1 Male. Gurun, Kedah, 50 ft. 13th December, 1915. [No. 2,247.]

"Iris hazel, orbital skin greenish yellow, bill pale horn, base of lower mandible and gape yellow, feet yellowish flesh." [H.C.R. & C.B.K.]

ERYTHROCICHLA BICOLOR (Less).

a—b. 2 Males. Gurun, Kedah, 50 ft. 13th December, 1915. [Nos. 2,243-4.]

"Iris pale hazel, bill horn, blackish on culmen, feet fleshy." [H.C.R. & C.B.K.]

DRYMCATAPHUS NIGROCAPITATUS (Eyton).

a. 1 Male. Gurun, Kedah, 50 ft. 12th December, 1915. [No. 2,234.]

"Iris red, upper mandible black, lower greenish white, feet pale brown." [H.C.R. & C.B.K.]

SETARIA AFFINIS (Blyth).

a. 1 Female. Gurun, Kedah, 50 ft. 12th December, 1915. [No. 2,230.]

"Iris hazel, bill slate, lower mandible greenish slate, feet pale slate." [H.C.R. & C.B.K.]

ANUROPSIS MALACCENSIS, Hartl.

a. 1 Female. Gurun, Kedah, 50 ft. 11th December, 1915. [No. 2,222.]

STACHYRIS NIGRICOLLIS (Temm).

a. 1 Male. Gurun, Kedah, 50 ft. 13th December, 1915. [No. 2,246.]

"Iris red, bill black, base slate, feet black." [H.C.R. & C.B.K.]

MACRONUS PTILOSUS, Jard. and Selby.

a. 1 Male. Gurun, Kedah, 50 ft. 13th December, 1915. [No. 2,245.]

"Iris red, orbital skin smalt, bill black, feet greenish black." [H.C.R. & C.B.K.]

PLATYSMURUS LEUCOPTERUS (Temm).

a—b. 2 Males. Gurun, Kedah, 50 ft. 12th December, 1915. [Nos. 2,226, 2,231.]

"Iris carmine, bill and feet black." [H.C.R. & C.B.K.]

DICRURUS ANNECTENS, Hodgs.

a—c. 3 Females imm. Gurun, Kedah, 50 ft. 12–13th December, 1915. [Nos. 2,225, 2,236, 2,255.]

"Iris red, or reddish brown, bill and feet black." [H.C.R. & C.B.K.]

DICRURUS NIGRESCENS, Oates.

Dicrurus nigrescens, Oates, *Faun. Brit. Ind. Birds*, i, p. 315 (1889).

a—e. 2 Male, 3 Female. Near Alor Star, Kedah. 25th November, 1915. Nos. 2,260–4.

"Iris red, bill and feet black." [H.C.R. & C.B.K.]

This locality is the most southerly recorded for the Tenasserim Ashy Drongo. The species is new to the Federated Malay States Museums.

EULABES JAVANENSIS (Osbeck).

a. 1 Male. Gurun, Kedah, 50 ft. 12th December, 1915. [No. 2,139.]

"Iris hazel, bill orange, tip and lappets chrome, legs chrome, claws, dark horn." [H.C.R. & C.B.K.]

LEPTOCOMA HASSELTII (Temm).

a. 1 Male. Gurun, Kedah, 50 ft. 12th December, 1915. [No. 2,235.]

"Iris dark, bill and feet black." [H.C.R. & C.B.K.]

REPTILES & BATRACHIANS.

1. GONYOCEPHALUS GRANDIS (Gray).

Blgr. p. 66.

A half-grown example was obtained at Gurun.

2. CALOTES CRISTATELLUS (Kuhl.).

Blgr. p. 70.

One example of the green "chameleon," so common in the more southern parts of the Peninsula, was obtained at Gurun, where it was apparently largely replaced by the following species.

3. CALOTES VERSICOLOR (Daud).

Blgr. p. 71.

Very numerous in the scrub vegetation about Gurun, and very sluggish, being easily taken by hand while seated on the branches and twigs of bushes, though it attempted to bite vigorously when caught.

4. MABUIA MULTIFASCIATA (Kuhl.).

Blgr. p. 84.

1 juv.

5. OXYGLOSSUS LAEVIS, Gunth.

Blgr. p. 225.

A small specimen of this frog was obtained at Gurun. It does not appear to have been met with often in the Peninsula.

Snout to vent 18 mm.

6. RANA MACRODON, Dum and Bibr.

One example from Gurun measuring 110 mm. from snout to vent.

7. RANA LIMNOCHARIS, Wiegman.

Blgr. p. 236.

Numerous specimens were obtained at Gurun, the largest measuring 55 mm. from snout to vent; with two exceptions all possess a yellow vertebral stripe varying from 4 mm. to a hair's breadth.

8. RHACOPHORUS LEUCOMYSTAX, Gravenhorst.

2 examples from Gurun.

9. BUFO ASPER, Gravenhorst.

A small example of a toad from Gurun, measuring 27 mm. from snout to vent, appears to be the young of this species: there are, however, no bony ridges on the head nor in any tympanum distinguishable.

10. BUFO MELANOSTICUS, Schneid.

Blgr. p. 273.

A medium-sized individual from Gurun, with abnormal coloration, being blackish-brown above with this colour extending over and covering much of the undersurface in the form of patches and spots.

11. BUFO PARVUS, Blgr.

Blgr. p. 274.

One example from Gurun, snout to vent 28 mm. There are a number of distinct dark patches and irregular stripes on the upper surface, sides and limbs.



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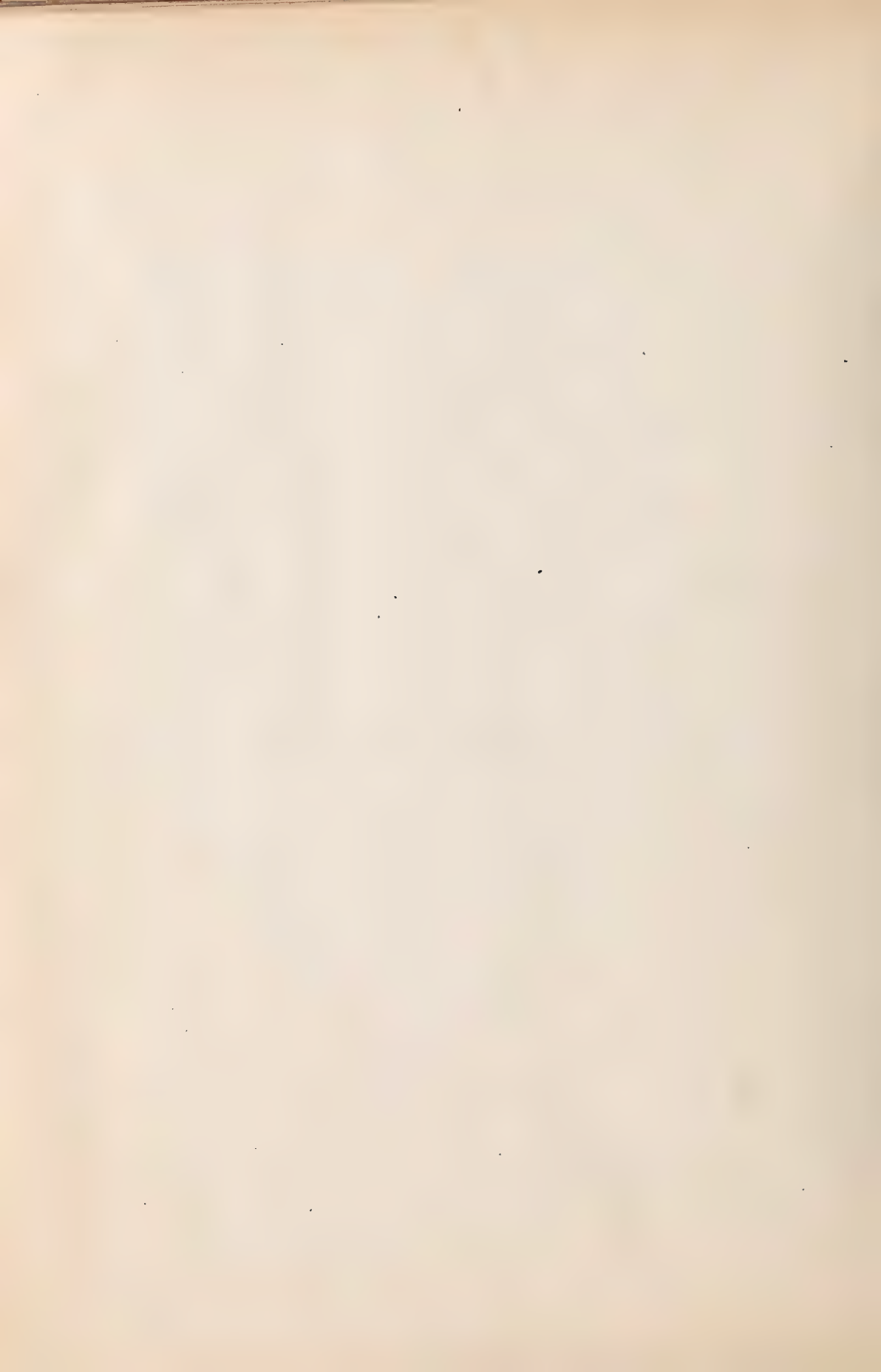
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1916.

VIII. A COLLECTION OF MAMMALS AND BIRDS
FROM PULAU PANJANG OR PULAU MAPOR,
RHIO-LINGGA ARCHIPELAGO.

By HERBERT C. ROBINSON, C.M.Z.S., M.B.O.U.

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The mammals of the Rhio-Lingga Archipelago have been investigated in great detail during the last fifteen years and large collections have been made on the majority of the islands, by Dr. W. L. Abbott, Mr. C. B. Kloss and the Federated Malay States Museums, these collections having been reported on by Messrs. G. S. Miller, R. W. Lyon, Oldfield Thomas and R. W. Wroughton in the following papers.

Gerritt S. Miller, Jr. ... "Mammals collected by Dr. W. L. Abbott on Islands in the South China Sea."

Proc. Acad. Sci. Washington, ii, pp. 203—246 (1900).

Gerritt S. Miller, Jr. ... "Mammals collected by Dr. W. L. Abbott in the Region of the Indragiri River, Sumatra."

Proc. Acad. Nat. Sci. Philadelphia, 1902, pp. 143—159.

Gerritt S. Miller, Jr. ... "Seventy New Malayan Mammals."

Smithsonian Misc. Coll. vol. 45, pp. 1—73 (passim) (1903).

Gerritt S. Miller, Jr. ... "The Mammals collected by Dr. W. L. Abbott in the Rhio-Lingga Archipelago."

Proc. U. S. Nat. Mus. vol. xxxi, pp. 247—286 (1906).

Gerritt S. Miller, Jr. ... "The Mouse Deer of the Rhio-Lingga Archipelago: A study of specific Differentiation under uniform environment."

Proc. U. S. Nat. Mus. vol. xxxvii, pp. 1—9, Pls. 1—8 (1909).

Gerritt S. Miller, Jr. ... "Fifty-one new Malayan Mammals."

Smithsonian Misc. Coll. vol. 61, No. 21, pp. 1—28 (1913).

December, 1916.

Marcus Ward Lyon, Jr. "Mammals of Batam Island, Rhio Archipelago."

Proc. U. S. Nat. Mus. vol. xxxi, pp. 653—657 (1907).

Marcus Ward Lyon, Jr. "Additional notes on mammals of the Rhio-Lingga Archipelago, with descriptions of new species and a revised list."

Proc. U. S. Nat. Mus. vol. xxxvi, pp. 479—491, Pl. 39 (1909).

Marcus Ward Lyon, Jr. "Tree Shrews: an Account of the Mammalian Family, Tupaidæ."

Proc. U. S. Nat. Mus. vol. xlv, pp. 1—88. Pls. 1—11 (1913).

Oldfield Thomas, and R. C. Wroughton. "Diagnoses of New Mammals collected by Mr. H. C. Robinson in the Malay Peninsula and Rhio Archipelago."

Ann. and Mag. Nat. Hist. (8) iii, pp. 439—441 (1909).

Oldfield Thomas, and R. C. Wroughton. "On Mammals from the Rhio Archipelago and Malay Peninsula, collected by Messrs. H. C. Robinson, C. B. Kloss and E. Seimund and presented to the National Museum by the Government of the Federated Malay States."

Journ. Fed. Malay States Mus. iv, pp. 99—129 (1909).

D. G. Elliot ... "Descriptions of apparently new species and sub-species of Monkeys of the genus, *Callicebus*, *Lagothrix*, *Papio Pithecus*, *Cercopithecus*, *Erythrocebus* and *Presbytis*."

Ann. and Mag. Nat. Hist. (8) iv, pp. 244—274 (1909).

D. G. Elliot ... "Descriptions of some new species of monkeys of the genera *Pithecus* and *Pygathrix* collected by Dr. W. L. Abbott and presented to the United States National Museum."

Proc. U. S. Nat. Mus. vol. xxxviii, pp. 343—352 (1910).

Almost the largest island that has remained unvisited by any naturalist is the one now under discussion. In view of its proximity to Bintang, the largest of the group, and the one possessing the richest fauna, it was thought that Pulau Mapor might also possess species of interest and I accordingly arranged to visit it and spent a few days there at the end of May and the beginning of June, 1915.

Our most cordial thanks are due to Mr. H. Spakler, at that time Consul General of the Netherlands in Singapore, who on this, as on numerous previous occasions proved most helpful in

obtaining for us the necessary permits from the local Dutch authorities. We are also indebted to the Resident of Rhiow, who instructed his local officers to afford us all the assistance in their power.

GEOGRAPHICAL.

Pulau Panjang or Mapor, as it is more generally known by its inhabitants is an island of roughly triangular shape with a greatest length and breadth of about three and a half to four miles, situated in Lat. $104^{\circ}50'$ E. and Long. 1° N. about 10 miles from the east coast of Bintang, the straits separating it from that island carrying about twelve fathoms, though a bank with only 6 to 8 fathoms running from the S.E. of Mapor very nearly joins it to the larger island.

Except on the north and N.E. corner it is surrounded by a fringing reef of coral of varying breadth, with many outlying "mushrooms," and must therefore be approached with the greatest caution by those not in possession of local knowledge. A bay on the N.E. corner however, afforded good anchorage in about six fathoms mud and is free from dangers, though the swell that frequently sets in from the East even in the S.W. monsoon makes it inconvenient for small vessels. The surface of the island is undulating and even rugged on the eastern side, the maximum elevation being about 340 feet. On this side there is still a good deal of old jungle though much of the better timber has been felled by Chinese for exportation to Singapore. In the remaining parts of the island most of the available land has in times past been cleared for the planting of gambier and on those plantations being abandoned has relapsed into thickets of Straits *Rhododendron* and *resam* (*Melastoma* and *Gleichenia*) very difficult to penetrate. In parts, however, the original forest, which consisted largely of a valuable timber tree (*tembusu*) (*Fagraea fragrans*) is taking hold again, the tree mentioned springing up again readily from stools.

On the western shore there are, in places, considerable flat areas, largely overgrown with lalang, and it is here, where they are sheltered from the violence of the N.E. monsoon, that the villages of the native inhabitants are found. These people are *Orang Lant* or *Jakun*, who under different tribal names are widely spread through the southern portion of the Malayan Peninsula and throughout the Rhio-Lingga Archipelago and portions of the adjacent low lying parts of Sumatra. They are of Proto-Malayan stock, at one time spoke a somewhat peculiar dialect and have only, in comparatively recent times, become converts to Islam, though they are now loathe to confess that they are other than Malays proper. In Mapor, where there are probably not more than a hundred individuals at the outside, they earn a precarious livelihood by fishing during the S.W. monsoon and by

collecting live turtle and tortoise-shell, the former of which are sold in Singapore while the latter finds a market in Rhio. They possess small kampongs where bananas, maize, *ubi kayu* and sugar cane are cultivated, but no rice is grown.

We stopped a couple of days on the Eastern side but being warned that the anchorage there was precarious in bad weather were conducted by a very tortuous and intricate channel to a little pool (it was hardly more) on the western side near an islet known as Mentigi, a commonplace name among orang laut people, where we remained a week.

The collecting was disappointing but besides the species actually secured we caught a fleeting glimpse of a *Tragulus*, while pig of both species, *Sus oi* and *Sus rhionis* are known to occur, but without dogs are difficult to obtain. In the sheltered bays in the vicinity Duyong (*Halicore duyong*) are very fairly common and are much hunted, cigarette holders made out of the canines being much prized and commanding a high price in Tanjong Pinang (the capital of Rhio). On our way back to Singapore we shot a small dark brown porpoise, one of a school? (*Flatanista* sp.) of fifteen or twenty, but it was seized by a shark and torn to pieces before we could secure it.

Of reptiles we got hardly any: *Cyclemys platynotus* is fairly common and so are *Draco volans*, *D. melanopogon* and *Mabuia multifasciata*, while we also secured specimens of the Hawks bill turtle. Near Mentigi was a pen in which were some fifty or sixty green turtle (*Chelone mydas*) which were bought up by a Chinaman for sale in Singapore and fed on a variety of sea-grass common in shallow bays in the neighbourhood.

SYSTEMATIC.

A. MAMMALS.

PITHECUS FASCICULARIS (Raffles).

Pithecus bintangensis, Elliot, Ann. & Mag. Nat. Hist. (8) iv, p. 257 (1909); id. Rev. Prim. ii, p. 246, pl. xxvii (1912).

1 ♂ ad. Mentigi, West Side Pulau Mapor, 6th June, 1915. F.M.S. No.

This *kra* belongs to the group with dark iron grey hands and feet, tail blackish above, on its basal portion silvery grey beneath, back of head and mantle annulated with black and rufous orange, the latter colour fading away towards the rump. Limbs and sides annulated with black and silvery grey. Dimensions (taken in the flesh). Head and Body, 395; (456) tail, 535; (505) hindfoot, 135 (117.5) ear 25 mm. (29).

Skull: Total length, 114 (105); occipito nasal length, 95 (85.5); zygomatic breadth, 73 (72.5); length of upper tooth row excl. canine 28.0 (26.7) mm.

The skull characters derived by Elliot from the small series at his command are worthless as subspecific characters

and the colour differences are also of dubious value, so I prefer not to apply any subspecific name to this monkey. In view of the general zoological affinities of the Rhio-Lingga archipelago it will probably prove to be allied rather to the Sumatran than to the Peninsular race and I have therefore used Raffles name which was conferred on specimens obtained in the neighbourhood of Bencoolen.

Measurements in Parentheses are those of the type of *Pithecius bintangensis* as given by Elliot.

CROCIDURA MAPORENSIS, Robinson & Kloss, sp. nov.

Type. Sub-adult female (skin and skull) collected on the East side of Pulau Mapor, Rhio-Lingga Archipelago, on 5th June, 1915, by H. C. Robinson.

Diagnosis. In colour closely resembling *C. aoris*,* but smaller, about the same size as *C. negligens*† but colour less pure grey. Skull rather broader than in the allied forms.

Skull: Broader relatively than that of *C. aoris* and rather more inflated in the anterior portion of the frontal region than in that species.

Measurements: Greatest length -(23.8)‡; basal length, 18.5 (21.1); lachrymal breadth of rostrum, 5.1 (4.9); greatest breadth above molars, 7.3 (7.9); cranial breadth above mastoid, 10.6 (10.5); maxillary tooth row, including iucisors, 9.3 (10.0).

Remarks. Though the material is very bad, the only specimen obtained being much damaged by the trap and by ants, we have little doubt that the Mapor shrew is a fairly distinct form. It is the first occurrence of the genus in the archipelago.

TUPAIA CASTANEA REDACTA subsp. nov.

Type:- ADULT male (skin and skull), No. 355/15, Federated Malay States Museums, collected on East side, Pulau Mapor, Rhio Archipelago, 7th June 1915; by H. C. Robinson.

Characters:-Extremely close to *Tupaia castanea*, Miller,¶ out somewhat smaller, the underparts especially the mesial streak and the thighs more rusty "ferruginous" Ridgeway (Pl. XIV) against "ochraceous tawny" (Pl. XV). and with the upper surface more chestnut, less maroon, mingled "Hays Russet (Pl. XIV) and 66 Xanthine Orange" (Plate III) against "Maroon" (Plate I).

Colour:- Top of head and sides of the face, hands and feet annulated black and buffy ochraceous, a buff ring round the eye. Rest of the upper surface rusty ferruginous, many of the hairs with glistening black tips. Tail except at the base above, where the hairs are tipped with black, almost uniform

* Ann. & Mag. Nat. Hist. (8) x, p. 589 (1912).

† Ann. & Mag. Nat. Hist. (8) xiii, p. 232 (1914).

‡ Measurements in parentheses are those of the type of *Crocidura aoris*.

¶ Smithsonian Misc. Coll. vol. 45, p. 54. 1903; Lyon, Proc. U.S. Nat. Mus. 4, p. 90, pl. 10, fig. 9 (1913.)

orange ferruginous, the hairs lighter below at their bases. Streaks from the ears orange buff, by no means conspicuous, beneath rusty ferruginous, a patch on breast and mesial line uniform, the rest with greyish bases to the hairs.

Skull:—Smaller than that of *T. castanea*, with the muzzle relatively shorter and blunter and the cranium less elongate. Palatal vacuities in both specimens available less defined than in the skulls of *T. castanea* in the collection. Teeth not different from those of the typical form.

Measurements:—Collectors external measurements (taken in the flesh):—

Head and body 172 (201); * Tail, 141 (151); Hindfoot, 38 (42.5) mm.

Cranial measurements: greatest length, 50.0 (54.0); basal length, 43.9 (46.3); palatal length, 26.7 (28.1)†; zygomatic breadth 24.9 (27.8); least interorbital breadth, 14.0 (15.0); cranial breadth, 20.0 (20.3); breadth of rostrum at diastema, 6.8 (7.1); lachrymal notch to tip of premaxillaries, 20.8 (23.0); upper molar series, 18.0 (19.2).

Specimens examined. The type and an immature female, (canine and *pm* at alveolus from the same locality.)

Remarks. The type specimen, though adult, is younger than the available series of seven skulls and four skins of *T. castanea*, from Pulau Bintang, having the orbital ring not completely ossified. It is however practically adult and has probably attained its full size. The other specimen is very considerably younger. Both are in somewhat worn pelage, while those from Bintang are in fresh, but I think it practically certain that the differences in colour will persist to a greater or less degree when specimens in similar condition are available for study. The differences are certainly of no less order than have been used to establish the majority of races formulated of late years.

SCIURUS VITTATUS MAPORENSIS, subsp. nov.

Type:—Adult female (skin and skull). Federated Malay States Museums No. 289/16, collected on the West side of Pulau Mapor, Rhio Archipelago, on June 6th, 1915, by H. C. Robinson.

Characters: Most closely resembling the race from Pulau Tinggi but smaller, with the black lateral stripes, clearer and less sullied. Colour of the under surface varying from ochraceous buff through ochraceous orange to ochraceous tawny, whereas in the other races from the Rhio Archipelago the

* Measurements in parentheses are those of an adult male of *Tupaia castanea* collected at Sungei Biru, Pulau Bintang, June 12th, 1908. F.M.S. Mus. No. 1792/08.

† Measurements in parentheses are those of an adult female of *Tupaia castanea* collected at Pasir Panjang, Pulau Bintang on June 9th, 1908, F.M.S. Mus. No. 1790/08.

colour is more clearly rufous or "vinaceous rufous." Resembling *Sc. v. subluteus* in these respects but a much smaller form.

Measurements: External measurements of the type, taken in the flesh: head and body, 185, (176)'; tail, 162, (158); Hf., 41.5, (40); ear, 15 mm., (16.5).

Average and extremes of ten specimens; head and body, 183, (170-192); tail, 160.5, (142-175); hind-foot, 42.3, (40-46.5); ear, 16, (15-18). Cranial measurements of type: greatest length, 45.8 (45.1)*; condylobasilar length, 39.1 (38.8); diastema, 10.4 (10.3); zygomatic breadth, 28.3 (26.0); median length of nasals, 13.3 (13.1); upper molar series including pm³ 8.9, (8.3).

Average and extremes of ten specimens: greatest length, 47.1, (45.6-48.5); condylo-basilar length, 40.1, (38.2-42.0); diastema, 10.6 (10.0-11.2); zygomatic breadth, 28.4 (27.8-29.3); median length of nasals, 14.0 (13.3-14.8); maxillary tooth row including pm³, 8.9, (8.4-9.3) mm. For detailed measurement see table on p. 67.

Specimens examined. Fifteen, all from Pulau Mapor.

RATTUS SURIFER LINGENSIS (Miller).

Mus lingensis, Miller, Proc. Acad. Nat. Sci. ii, p. 266 (1900); id. Proc. Acad. Nat. Sci. Philadelphia, 1902, p. 154; id. Proc. U.S. Nat. Mus. xxxi, p. 266 (1906); Lyon, op cit, xxxi, p. 655 (1907); Thos. and Wrought. Journ. Fed. Malay States Mus. iv, p. 125 (1909); Lyon, Proc. U.S. Nat. Mus. xxxvi, p. 484 (1909).

A very large series of this rat was collected on Mapor which for the present we refer to this race. The colour characters assigned to it as compared with *E. surifer* from the mainland hold good, viz., a dull, more clay-coloured tint with much less ochraceous orange on the flanks and a greater admixture of black on the back, but we are unable to see that the Rhio form has a narrower palate as stated by Miller. The tail is perhaps, on an average, relatively shorter than in the mainland form and the skull is somewhat more heavily built with a greater development of the ridges.

The skull dimensions, even if equally adult animals from the same island are compared are, as Lyon notes, variable. Specimens from Karimon and Kundur seem to be the largest and those from Battam and Bintang on the whole dullest in tint. The race is much more closely related to those inhabiting the islands of the east coast of the Peninsula than to the lightly built, bright coloured animal found in Singapore. *Epimys surifer leonis* (Robinson and Kloss). About fifty specimens, adult and young, were obtained. For measurements see p. 68.

* Measurements in parentheses those of the type of *Sciurus vittatus famulus* from Pulau Dayang nr. Pulau Aor (Robinson. Ann. and Mag. Nat. Hist. (8) X. p. 592 (1912).

RATTUS RATTUS BATIN, subsp. nov.

Type:—Adult male, aged (skin and skull). Collected at Mentigi, West side of Pulau Mapor or Panjang, Rhio Archipelago, on June 6th, 1915, by H. C. Robinson. Federated Malay States Museums No. 304/15.

Characters:—A member of that section of the *Epimys rattus* group, characterized by somewhat slender feet, hispid, but not very spiny pelage and marked development of long black piles on the lower back. Separable from the form* inhabiting the adjacent islands of Bintang and Battam by the very much lighter colour above and by the somewhat larger bullae.

Measurements:—External dimensions of the type, taken in the flesh: head and body, 208 (180); tail, 218 (195); hind-foot, 35.5 (34), ear 22 (20.5). Extremes of eight specimens, head and body, 171–208; tail, 193–218; hindfoot, 33.5–35.5; ear, 20–22.

Cranial measurements of type: greatest length, 44.4 (44.0); condylo-basilar length, 39.0 (39.0); diastema, 12.4 (12.9); zygomatic breadth, 20.0 (20.1); median length of nasals, 16.0 (16.3); upper molar series, 6.8 (6.9).

Extremes of twelve specimens; greatest length, 41.5–44.4; condylo-basilar length, 36.3–39.0; diastema, 11.6–12.6; zygomatic breadth, 18.8–21.2; median length of nasals, 14.0–16.1; upper molar series, 6.5–7.2 mm. For detailed measurement see table on p. 69.

Specimens examined:—Fifteen, from the east and west sides of Pulau Mapor.

Remarks:—The series examined, which was trapped both in old jungle and in the vicinity of the huts of the some what primitive *orang laut* people inhabiting the island are fairly uniform, the principal variation being in the degree of distinctness in the line of separation of the light undersurface from the flanks. The race closely resembles a form, as yet un-named, inhabiting the western islands of the Archipelago but appears to be somewhat more robust. The intrusion in the central islands of a race, *R. r. rhionis* which closely resembles the north European *R. rattus rattus* is a curious and as yet unexplained fact.

* *Mus rattus rhionis*, Thos. & Wrought. Ann. and Mag. Nat. Hist. (8) iii, p. 441 (1909). Measurements in parentheses are those of an adult male topotype of *Mus rattus rhionis*, Thos & Wrought. F.M.S. Mus. No. 2086/08.

MEASUREMENTS OF *Callosciurus vittatus maporensis*, ROBINSON.

	Sex.	Head and Body.	Tail.	Hind-foot.	Ear.	SKULL.						Condition of teeth.	F.M.S. No.	REMARKS.
						Greatest length.	Cond-ylo-basilar length.	Dia-stema.	Zygo-matic breadth.	Median nasal length.	Upper tooth row.			
Pulau Mapor (E. side)	♀	192	175	46.5	15	48.1	42.0	10.9	..	14.2	8.8	worn	287/15	Adult.
" (W. side)	♂	170	155	41.5	16	45.8	39.1	10.4	28.3	13.3	8.9	"	289/15	" Type.
" "	♂	185	162	41.5	16	46.2	39.3	10.2	28.0	13.3	9.0	V. sl.	290/15	"
" (E. side)	♂	170	..	41	16	47.0	40.0	10.9	28.1	14.3	8.4	Sl.	291/15	"
" "	♂	192	171	45	16	47.1	40.1	10.4	29.0	14.8	8.9	Sl.	292/15	"
" (W. side)	♀	174	148	40.5	15	45.6	38.2	10.0	27.9	14.0	8.8	Sl.	293/15	"
" "	♀	190	157	40	16	46.8	40.3	10.8	27.8	13.9	8.9	Un	294/15	"
" (E. side)	♀	186	165	42	16	47.8	39.9	10.6	28.7	14.2	9.3	Sl.	358/15	" N.C.M.*
" "	♀	185	148	43	16	47.9	40.4	10.9	28.4	14.2	9.1	Un	360/15	"
" "	♂	186	164	43	18	48.5	41.9	11.2	29.3	13.8	9.1	Sl.	361/15	"

* Native collectors' skin measurements.

MEASUREMENTS OF Rats from Pulau Mapor.

	Sex.	Head and body.	Tail.	Hind-foot.	Ear.	SKULL.					Condition of teeth.	F.M.S. No.	REMARKS.
						Greatest length.	Condylor-basilar length.	Dia-stema.	Zygo-matic breadth.	Median nasal length.	Upper tooth row.		
<i>Rattus rattus</i> <i>lingensis</i> (Miller).													
East side, Pulau Mapor ..	♀ ♀	186 209	164 176	37.5 40	21 21	43.1 46.1	36.2 39.8	12.8 13.2	20.0 ..	16.7 18.2	6.0 6.3	297/15 298/15	M. worn V. "
East side, Pulau Mapor ..	♀ ♀	183	162	37.5	22	43.7	36.2	12.2	19.6	16.1	6.2	299/15	M. "
" " " " ..	♀ ♀	190	159	38.5	21	42.1	36.8	12.0	20.1	16.7	6.1	300/15	V. sl. "
Mentigi, West side, Pulau Mapor.	♂ ♂	203 207	179 179	40.5 41.5	22 23	47.0 46.3	39.9 39.2	13.2 13.2	20.7 21.1	18.8 18.5	6.2 6.1	301/15 303/15	" "
East side, Pulau Mapor ..	♀ ♀	214 200	167 172	41.5 37	23 21.5	46.1 44.1	39.2 37.9	13.6 13.0	20.3 19.6	18.3 18.6	6.2 6.1	305/15 309/15	" "
" " " " ..	♂ ♂	205	191	40	23	45.2	39.0	13.1	20.0	18.2	6.3	316/15	V. "
" " " " ..	♂ ♂	201	166	37	23	44.2	37.8	13.0	20.3	17.1	6.2	320/15	Sl. "
Mentigi, West side, Pulau Mapor.	♀ ♀	183 212	155 ..	38 40	22 ..	44.2 46.3	38.0 39.2	12.8 12.9	20.0 20.2	17.2 18.6	6.2 6.3	326/15 329/15	M. " Sl. "
East side, Pulau Mapor ..	♂ ♀	182	153	36	22	43.6 43.1	37.8 37.2	13.2 13.0	18.2 20.0	18.0 16.4	6.2 6.0	331/15 334/15	Sl. " " "
" " " " ..	♀ ♀	190	170	36	22	45.8	38.9	13.1	21.0	16.4	6.8	337/15	Sub-Adult N.C.M.*
" " " " ..	♀ ♀	192	158	38	22	44.9	38.6	13.0	..	17.1	6.3	341/15	Adult N.C.M.
" " " " ..	♂ ♂	42.3	35.1	11.3	18.3	16.3	6.2	342/15	" Sub-Adult.
" " " " ..	♂ ♂	196	179	38	23	46.5	39.0	13.4	21.1	18.8	6.3	370/15	Adult N.C.M.

* Native collectors' skin measurements.

MEASUREMENTS OF Rats from Pulau Mapor—Continued.

	Sex.	Head and Body.	Tail.	Hind-foot.	Ear.	SKULL.						Condition of teeth.	F. M. S. No.	REMARKS.	
						Greatest length.	Condylor-basilar length.	Dia-stema.	Zygo-matic breadth.	Median nasal length.	Upper tooth row.				
<i>Rattus rattus</i>															
<i>lingensis</i> (Millev)—Cont.															
East Side, Pulau Mapor ..	♀	188	152	35	23	43.1	36.3	12.7	19.5	15.9	6.1	371/15	M.	Adult N.C.M.*	
" " " " " "	♀	182	..	39	22	43.3	37.5	12.6	19.4	17.0	6.1	372/15	Sl.	" "	
" " " " " "	♀	182	159	36	23	45.0	38.5	13.8	20.3	17.9	6.2	373/15	"	" "	
" " " " " "	♀	195	166	37	23	45.9	39.0	12.8	20.9	18.2	6.3	379/15	"	" "	
" " " " " "	♂	43.7	38.6	13.0	19.3	17.7	6.1	380/15	M.	" "	
" " " " " "	♀	45.0	38.4	13.0	19.4	18.3	6.3	382/15	"	Adult aged.	
<i>Rattus rattus</i> batin.															
East side, Pulau Mapor ..	♂	171	197	35.5	20	42.0	36.6	12.0	20.0	15.0	6.8	295/15	Sl. worn		
" " " " " "	♀	188	202	34	20	42.0	37.1	12.0	20.0	15.0	6.7	302/15	M.		
Mentigi, West side, Pulau Mapor.	♂	208	218	35.5	22	44.4	39.0	12.4	20.1	16.0	6.8	304/15	V.	Type.	
" " " " " "	♂	171	200	34.5	20	41.5	36.3	12.0	19.5	15.3	6.5	306/15	Un		
" " " " " "	♂	183	193	35.5	21	42.2	37.1	12.6	20.3	15.7	6.8	311/15	V. sl.		
East side, Pulau Mapor ..	♂	173	..	35	20.5	41.0	37.1	12.0	18.8	14.7	7.0	317/15	Un		
" " " " " "	♂	177	206	34	20	..	..	12.0	19.2	15.0	6.9	319/15	Un	
" " " " " "	♀	182	202	33.5	20	42.0	37.0	11.8	21.1	14.0	6.5	322/15	M.		
" " " " " "	♀	43.2	37.8	12.0	21.8	16.0	6.6	323/15	"		
" " " " " "	♂	43.0	38.1	12.2	20.7	16.1	7.1	338/15	M.	N.C.M.	
" " " " " "	♂	43.2	37.3	11.6	20.3	15.2	7.2	340/15	Sl.	" "	
" " " " " "	♀	44.0	38.3	12.1	21.2	15.8	7.1	348/15	Sl.	" "	
" " " " " "	♀	351/15	"	" "	

* Native collectors' skin measurement

II. BIRDS.

With the exception of a short list of birds collected on the "Lingga Islands," presumably Lingga itself, by the late Alfred Everetts' collectors by Dr. Hartert (Nov. Zool. vii, pp. 549-50 (1900) I am not aware of any account of the avifauna of any of the Rhio-Lingga Archipelago.

From an ornithologist's point of view most of the small Indo-Malayan islands lying within the 20 fathom line from larger land-masses are extremely uninteresting and Mapor, where, with the exception of two species of sun-birds, birds were very scarce both in species and individuals, proved no exception to this rule. A list of the specimens observed or obtained is however given, those of which no specimens were preserved being marked with an asterisk.

1. *TRETERON NIPALENSIS*, Hodgs.

1 ♂

2. *OSMOTRETERON VERNANS* (Linn.)

1 ♂, 1 ♀. Very common.

- *3. *MYRISTICIVORA BICOLOR* (Scop.).

Extremely abundant, roosting on the small islets off the coast.

4. *STERNA BERGII PELECANOIDES* (King).

Thalasseus bergii pelecanoides, *Oberholser, Proc. U.S. Nat. Mus.* 49, p. 523 (1915).

Common off the sand spits and reefs on the western side of the island. Two specimens, male and female, with the exposed culmen 61.5 and 64 mm. appear to belong to this race.

5. *AECIALITIS ALEXANDRINA* (Linn.)

Antea, vol. V, p. 142. A single male of the tropical race of the Kentish Plover in breeding plumage.

- *6. *NUMENIUS ARQUATA* (Linn.)

- *7. *NUMENIUS PHAEOPUS* (Linn.)

Both the Curlew and Whimbrel were fairly common round Mapor but were exceedingly wild and almost impossible to approach within gunshot.

8. *LIMONITES RUFICOLLIS* (Pall).

A single female shot on June 6th.

- *9. *ARDEA SUMATRANA*, Raffles.

- *10. *DEMIEGRETTA SACRA* (Gm.).

Common on the reefs.

- *11. *HALIAETUS LEUCOGASTER* (Gm.).

- *12. *HALIASTUR INTER MEDIUS* (Gurney).

Common as everywhere else on the Malayan coasts.

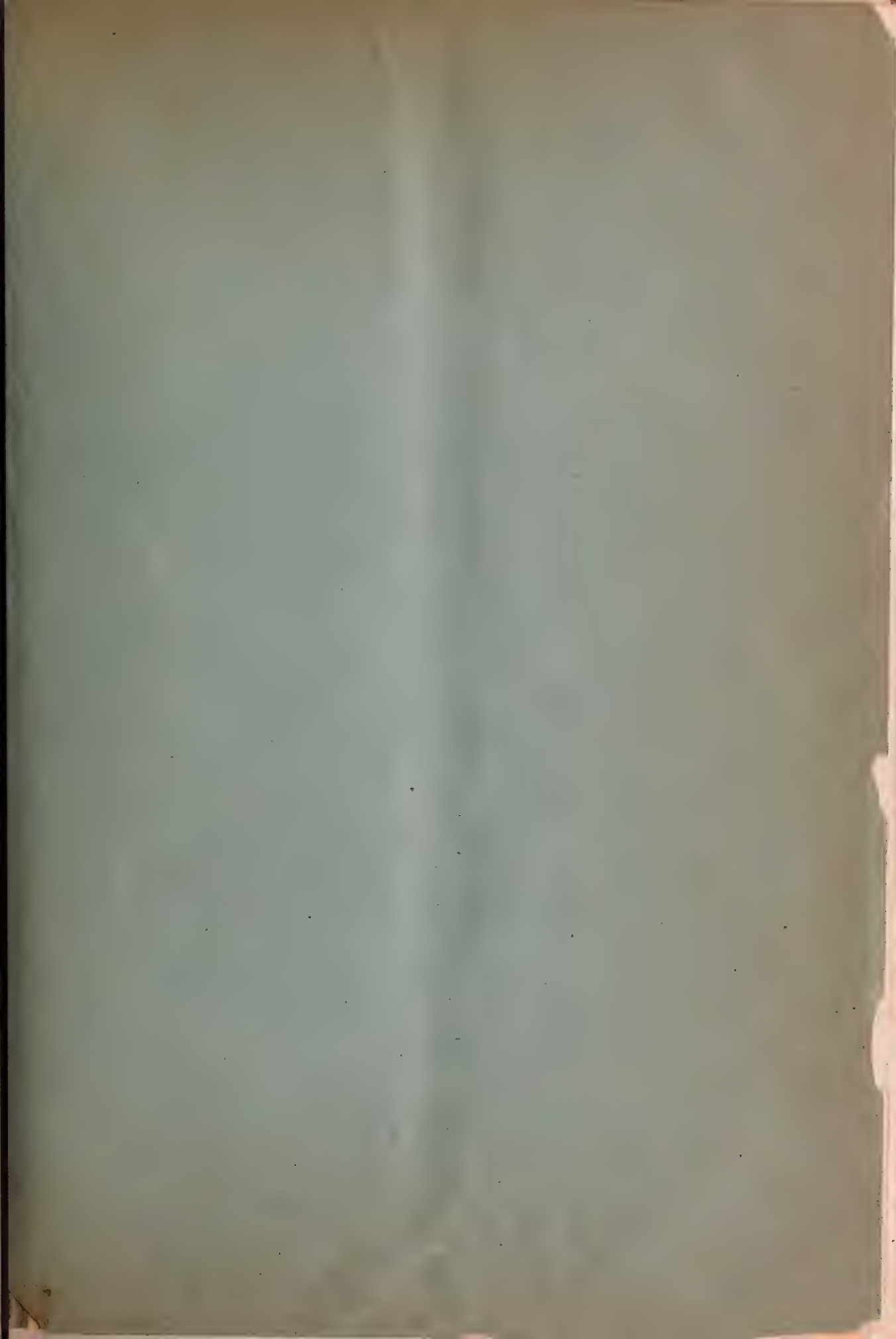
13. HALCYON ARMSTRONGI, Sharpe.
Antea, vol. V, p. 145.
1♂, 1♀.
Not very abundant.
14. PELARGOPSIS MALACCENSIS, Sharpe.
Ramphalcyon capensis hydrophila, Oberholser, *Proc. U. S. Nat. Mus.* 35, p. 677 (1909).
1♂.
By no means common.

I find it impossible to follow Mr. Oberholser in his arrangement of the Peninsular forms of this genus and consider that all specimens from Bandon southwards to Singapore and the Rhio Archipelago must be regarded as identical subspecifically though specimens from Koh Pennan (*Antea*, vol. V, p. 145, show an approach to *P. m. burmanica*, Sharpe, having a rather lighter pileum than the majority of Malayan specimens, though in this they agree with five skins, from the islands of Bintang, Battam and Mapor in the Rhio Archipelago which belong to the above cited *Ramphalcyon capensis hydrophila*, whose type locality is Singapore.

The dimensions of the Mapor specimen taken in the flesh were—Total length, 371; wing, 144; tail, 99; visible culmen, 85; bill from gape, 95; tarsus, 19.8 mm.

15. ANTHRACOCEROS CONVEXUS (Temm.)
1♂, 1♀ imm. Very fairly common.
16. HYPOTHYMIS AZUREA PROPHATA, Oberholser
Hypothymis azurea (Bodd.), *Hartert, tom. cit.* p. 550.
3♂, 1♀.
Fairly common.
17. MUSCITREA CINEREA, Blyth.
Muscitrea grisola (Blyth) *Antea*, vol. V, p. 148.
4♂, 2♀.
Very numerous in small patches of mangrove as elsewhere throughout the Malay Peninsula in similar situations.
18. PYCNONOTUS PLUMOSUS, Blyth.
3♂. Fairly common in secondary growth.
19. CITTOCINCLA MACRURA (Gm.)
Cittocincla tricolor (Vieill). *Hartert, tom. cit.* p. 550.
1♂, 1♀ imm.
Common.
20. ORTHOTOMUS RUFICEPS (Less.)
Hartert, tom. cit. p. 549.
A single rather immature female.
21. PHYLLOSCOPUS BOREALIS (Blas.).
Antea, vol. V, p. 150.
One female shot on June 4th. A late date for this migrant.

22. DISSEMURUS PARADISEUS (LINN.)
 Dissemurus platurus (Vieill.) *Hartert, tom. cit. p. 550.*
 3♂, 2♀. All in very worn plumage. Very common.
23. EULABES JAVANENSIS (Osbeck).
 2♀. Very common.
 Rather small in dimensions but not *E. intermedius*
 (A. Hay).
24. CALORNIS CHALYBEA (Horsf.)
Antea, vol. V, p. 151.
 1♂, 1♀, 1♀ imm. Common.
25. AETHOPYGA SIPARAJA (Horsf.)
 3♂. Common in open wastes covered with low
 shrubs.
26. CYRTOSTOMUS PECTORALIS (Horsf.)
Cinnyris pectoralis (Horsf.) *Hartert, tom. cit. p. 550.*
 7♂, 3♀.
 Very abundant on the sea shore.
27. LEPTOCOMA HASSELTII (Temm.)
Cinnyris hasselti (Temm.) *Hartert, tom. cit. p. 550.*
 6♂, 1♀. Very common, as the preceding species.
28. ANTHREPTES MALACCENSIS (Scop).
Anthreptes malaccensis (Scop.) *Hartert, tom. cit.*
 p. 550.
 2♀. In the coconut palms. Rare.
29. DICAUEUM CRUENTATUM (Linn.)
Antea, vol. V, p. 152.
 1♂, 1♀. Not common.
30. DICAUEUM TRIGONOSTIGMA (Scop.)
Dicaeum trigonostigma (Scop.) *Hartert, tom. cit.*
 p. 550.
 3♂. Common in small trees in scrub.



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XXI. ON A COLLECTION OF BIRDS FROM PULAU
LANGKAWI AND OTHER ISLANDS ON THE
NORTH-WEST COAST OF THE MALAY
PENINSULA.

By HERBERT C. ROBINSON, *C.M.Z.S.*, *M.B.O.U.*

The present paper is based mainly on a collection made by Mr. Seimund and myself and a staff of native collectors on the principal islands off the north-west coast of the Malay Peninsula between the parallels of 6° N. and $7^{\circ} 30'$ N. during the months of December and January, 1916-17.

The islands had for the most part been visited by us previously for two or three days at a time and I have in many cases included species obtained on these occasions where the specimens have raised points of any interest. Many species on the other hand, notably hawks and herons, which have been sufficiently dealt with elsewhere are not here mentioned.

The collections are probably fairly exhaustive for the islands of Langkawi and Terutau but are of course very incomplete, for the other islands, which were only visited for two or three days at a time, merely sufficiently long to obtain representative series of the small mammals which were the main objects of our visits.

It will be seen that the avifauna presents the same general characters as those of all the other groups of islands in the vicinity of the Malay Peninsula, namely, a great scarcity of all the more strictly jungle frequenting species belonging to the great family of *Timeliidae*, and the total absence of *Eurylaemidae*, though we find a few species of Trogons, Barbets and Woodpeckers orders which are entirely absent from the islands off the coast of Pahang on the east side of the Peninsula, these islands being smaller in extent and separated from the mainland by broader stretches of deeper water. Owing to the fact that our visit took place in the winter months, migratory flycatchers, thrushes and warblers are well represented, while a considerable number of shore birds were also obtained or observed.

A brief account of the localities visited on the present cruise is appended, while the synonymy has been restricted to narrow limits, only two papers which have some bearing on the localities being usually quoted viz:—

“On birds from the Northern Portion of the Malay Peninsula including the Islands of Langkawi and Terutau; with notes on other rare Malayan Species from the Southern Districts.” By Herbert C. Robinson and Cecil Boden Kloss.

Ibis 1910, pp. 659-675, Plate X, and text figure 6, *Ibis* 1911, pp. 10-80, Pl. 1, and text figures 5 and 6, quoted as "Robinson & Kloss."

"Zoological Results of the Swedish Zoological Expeditions to Siam 1911-1912 and 1914-1915, IV, Birds. 11," by Nils Gyldenstolpe.

Kungl. Svenska Vetenskapsakademiens Handlingar. Band. 56, No. 2, 1916, quoted as "Gyldenstolpe."

PULAU PAYA. A small rocky island, covered with jungle and without regular inhabitants, about two hundred and fifty feet high, situated about sixteen miles west of the mouth of the Kedah River in Lat. $6^{\circ} 3'$ N. and Long. $100^{\circ} 3'$ E. and separated from the mainland by depths of fifteen fathoms. The island is about a mile in maximum length and about a third of a mile in breadth. It has been visited by us several times, on the last occasion at the end of April 1915, but no birds of any great interest have been obtained on it.

A fruit bat (*Pteropus hypomelanus geminorum*, Miller), only known elsewhere from the Mergui Archipelago, was found to be abundant on it (c.f. Kloss, *antea*, Vol. VI, p. 245 (1916)).

PULAU LANGKAWI. This island, with those immediately adjacent to it, is contained in an area roughly shaped as an equilateral triangle with a side of somewhat over twenty miles between the Latitudes $6^{\circ} 9'$, and $6^{\circ} 27'$ N. and Longitude $99^{\circ} 38'$ and $99^{\circ} 56'$, E, separated from the mainland by a strait ten miles wide at the narrowest part and by depths not exceeding ten fathoms.

The island is extremely rugged in character, though in the neighbourhood of the two principal villages, Kwah and Kuala Malacca, there are considerable areas of flat land devoted to orchards, rice and coconuts and of late years to the inevitable rubber. There is also a large amount of cultivation on the north coast, where a fairly dense population is settled.

Elsewhere the country is very mountainous, the highest hill, Gunong Raya, reaching nearly 3,000 feet, while there is a range of precipitous mountains at the north-west corner well over two thousand feet in height. On the present occasion we spent from the 12-15th December at a place called Burau at the foot of this range, where however no birds of any great interest were obtained.

The geological formation of Langkawi is by no means so generally limestone as is usually assumed and much granite, quartzite, sandstone and other metamorphic rocks also occur. Most of the smaller islets of the group and many of the larger ones are, however, exclusively limestone and it is on these that the many peculiar species of plants belonging to the Langkawi flora are almost entirely to be found though the forest flora generally appears to differ greatly from that of the southern part of the Malay Peninsula. A considerable collection of plants was made at Burau, but here as

elsewhere we were unfortunate in finding most species out of flower.

DAYANG BUNTING. A small island forming part of the Langkawi group, mainly, though possibly not entirely, of limestone, which in several places attains the quality of marble, white and even in grain, almost saccharine, resembling that found at Lenggong in Upper Perak and decidedly superior to that of the Ipoh Quarries. The island is quite uninhabited and covered with jungle and is nearly everywhere steep-to, though several deep indentations and the heads of bays are filled with mangrove.

The chief point of interest in the island is the fresh water lake which at two places approaches to within a few yards of the shore and is separated from it by a narrow rocky rim of no very great height so that the surface of the lake is probably only a few feet above the level of the sea. In shape it is a long oval 5-600 yards across by 1,100 or 1,200 yards long and is about $4\frac{1}{2}$ -5 fathoms deep close to the shore, deepening to 8 in the centre and nowhere exceeding $8\frac{1}{2}$, the depths being fairly regular. The bottom is in places rock but mostly mud. There seems to be only one species of fish in the lake and no fresh water sponges were found round the edges or on twigs and logs afloat in the lake. There is good anchorage near the island at the head of a fiord leading to the best approach to the lake, which however is much encumbered with coral knobs at its head. Fresh water escapes freely through the sand and rocks of the shore and large quantities of excellent quality can be obtained at all seasons by the use of a hose.

With the exception of mousedeer most of the mammals occurring on the main island of Langkawi occur on this one also; no fruit bats were seen and other species were scarce.

Land birds were exceedingly scarce, the only common species being *Cyornis sumatrensis*. There were not many insects about and the few butterflies obtained were of no special interest. A Cicada was heard and sand-flies were only too common.

We did not actually see any *biawak* (*Varanus sp.*) though they must occur. Four species of *Draco* were very common and we secured one young *Calotes versicolor* and three species of skinks. We also collected three species of frogs of which one was very common at the edge of the lake.

At a considerably higher level than the large lake, the Dyaks came across another pool, much smaller and largely choked with dead and fallen timber. The natives are aware of its existence and state that in the dry season it contains no water at all.

In addition to the zoological collections about 60 species of plants were secured but seem to be of no very great interest. Few of the rock plants were in flower. Orchids

were scarce and *Gesneraceae*, for which we came specially to look, were not conspicuous or interesting and were almost entirely out of flower.

PULAU TERUTAU. Pulau Terutau lies north of Langkawi, from which it is separated by a channel about five miles in breadth. I have little to add to the brief account of the island given by Mr. Kloss and myself in the *Ibis* for 1910, pp. 666 et seq.

During our stay on the present visit, which lasted from 17—29th December we circumnavigated the island and landed at several spots on the western shore which is very bold and exposed though there are three large shallow bays with fine beaches. The island is even more sparsely inhabited than it was in 1907 and 1908, but a good deal of timber cutting takes place at intervals. The collections of birds were neither large nor of any great importance but we obtained a number of mammals which were special desiderata of the Museum, including the rare *Petaurista terutaws*, hitherto known only from the type, and a new species of *Arctogalidia*.

KOH LIBONG or PULAU TELIBUN. Situated between Lat. $7^{\circ} 12'$ and $7^{\circ} 18'$. N. and Long $99^{\circ} 31'$ and $99^{\circ} 27'$, this island is roughly an equilateral triangle in shape with sides of about six miles. One face is high and rocky with a sandy shore, the maximum height being put in the charts at about 1,450 feet, though this estimate is probably excessive. The high land, which is on the western face, is comparatively narrow and the rest of the island is low and flat, there being a good deal of mangrove in places while further inland there are sandy flats and grassy plains overgrown with *gelam* (*Melaleuca*), several species of tall grass (though *lalang* is quite absent) and a variety of prickly shrubs. The high land is covered with jungle though in places where this has been cleared for hill rice and the like, the landscape has assumed a park-like aspect, very pleasing to the eye after the monotony of the jungle of the southern islands, though by no means so pleasant to traverse. The jungle is open and the undergrowth consists largely of a species of palm, with fan shaped leaves, growing to about fifteen feet in height. Epiphytes generally were scarce and orchids, in contrast to the islets off Terutau and Langkawi, are by no means numerous. In fact the botany generally was of no great interest, doubtless due to the fact that there had been but little rain for some time prior to our visit and few plants were consequently in flower, the most attractive being a small *Begonia* with rose-pink flowers which grew on damp rocks on the shore, barely above tide marks.

The flat portion of the island being unsuitable for collecting upon and water being there scarce and indifferent in quality, we anchored in a small bight off the N.W. corner of the island where there was a small stream of excellent water and a fine, sandy beach backed by good jungle. We

collected here from December 31st to January 4th, and besides the mammals actually secured, which will be dealt with later, obtained evidence of the existence of a form of *Cervus equinus* (rusa) which is very dark in colour and of a species of *Paradoxurus* (musang).

A very small bat, probably an *Emballonura*, was seen round a flowering tree after dark, while the *orang laut* or coast aboriginals told us that there were many of the larger *kluang* (*Pteropus*) among the mangroves at certain times of the year, though none were to be found at the time of our visit.

Neither Pig, Mouse deer or the Lotong (*Pithecus obscurus*) are found on the island.

The strait separating the island from the mainland is barely a mile wide at its narrowest part and carries less than ten feet of water at low tide and it is therefore at first sight surprising that the island forms of the mammals should differ to the extent that they undoubtedly do from the mainland stocks. It seems probable, however, that the lower land forming the eastern part of the island is of very recent formation and that Telibun, in times geologically very recent was separated from the mainland by a deeper and wider strait than is at present the case.

Birds, as our lists show, were few in number and not particularly interesting in species.

From the evidence of the rocks on the shore it would appear that the island is in part composed of sandstones and other similar formations though many of the higher peaks seem to be limestone.

KOH. MUK OR PULAU MUNTIA. A small island, roughly circular or quadrangular in shape, about 6 miles NNW. of Telibun and separated from it and the mainland by depths not exceeding four fathoms. The WNW. and SW. parts of the island consist of precipitous limestone bluffs coming down sheer into the sea, the maximum height of the island being about a thousand feet. The E. and SE. sides however, are low and sandy and there is good anchorage for small craft in the SE. bay in about three fathoms. The western face is much fissured by caves, some of considerable size, in which esculent swallows breed in great numbers while others are inhabited by bats (*Taphozous melanopogon fretensis*, Thomas). Some of these caves appear to have been used as places of sepulture, as we came across fragmentary human bones in more than one of them, but this fact has already been noted by Annandale who has described skeletons collected by him in the vicinity.

At the time of our visit from 4-8th January 1917, there having been little rain for over six weeks, the island was deficient in good water. There are several *orang laut* clearings on the eastern side of the island, which is much frequented for fishing purposes and for the collection of beche-de-mer or trepang

(*Holothuria* spp.) which is extraordinarily abundant in the sandy bays in from three to five fathoms.

Besides the species of mammals actually obtained the *kra* monkey, *Macaca irus*, is fairly common, while Seimund came across a large specimen of *Felis temmincki*, feeding on a big hawk. Our *orang laut* pilot showed us a cranny in the rocks in which this "rimau" regularly bred. Tracks of otter were also noted in abundance.

Birds were more numerous than on most of the other smaller islands visited by us, especially green pigeon and the very handsome woodpigeon, *Columba punicea*.

KOH KADAN or PULAU PAPAN. A long, narrow island, about two miles long by a quarter to half a mile broad, about eight miles WNW. of the northern end of Pulau Telibun and about five miles SW. of Pulau Muntia. The island is wooded, about 200 feet high, with a sandy beach on the eastern side but steep to on the western, with a long reef extending for four or five miles from its southern extremity. We spent one night only there 7-8th January 1917, and found nothing of any interest, the only mammal being a race of *Epimys rattus* and the only land birds, Crows and Koels (*Eudynamis malayana*).

KOH KYAN or PULAU NIOR, S'TALI and KOH NGAI or PULAU KUDA. Two precipitous limestone islets about five miles due north of Pulau Papan and about four miles west of Pulau Muntia. They are thin clothed with vegetation, the trees being largely species of *Ficus* and other epiphytic forms and at certain times of the year are said to be frequented by myriads of White Imperial Pigeon (*Myristicivora bicolor*) though at the time of our visit in January the only land birds on them were swallows (*Hirundo javanica*) and species of *Collocalia* and *Cypselus*. Pulau Kuda however was inhabited by enormous numbers of a small species of *Pteropus* which hung in clusters to the cracks in the vertical cliffs and to the branches of the small stunted trees growing therefrom.

PULAU LONTAR. A large island about sixteen miles long by four miles wide, situate between latitude $7^{\circ} 29'$ and $7^{\circ} 44'$ N. and Longitude $99^{\circ} 2'$ and $99^{\circ} 7'$ E. On the western side it is steep to, but on the east there are plains of considerable extent. In the middle it is divided by a shallow strait broadly bordered with mangrove. In the centre the land rises to a considerable altitude, certainly over a thousand feet, and is covered with jungle, which however has been much cut out for temporary cultivations.

The population is considerable, mainly Samsams *i.e.* of mixed Malay-Siamese stock with a strong infusion of *orang laut*. We spent a few days anchored off the principal village, a place of some size with numerous Chinese shops, known as Pasir Raja. The coast however in this vicinity is fronted by a broad bank of very soft mud which is only passable at half tide by small boats, though a jetty some three hundred yards in length traverses part of it.

During our stay from January 9-12th, a very strong easterly wind, which only dropped for a few hours in the early morning, forced us to lie under the lee of a small island, Pulau Depok, some three miles distant from the settlement, and on several occasions we were nearly swamped in getting to and leaving the main island.

We obtained a large series of mammals including a lotong and a kra, a mousedeer, musang and tangelin, and rats and squirrels of several species.

Such birds as were obtained show that the fauna is of mainland rather than insular facies as the occurrence of such genera as *Calorhamphus* and *Phyllornis* indicates. Peafowl are said to occur though we did not obtain any, Buffalo, both feral and domesticated are common, and tiger are occasionally met with while serow (*Nemorrhoedus*) are abundant on a limestone island between Pulau Lontar and the shore. The main island appears to have but little limestone on it while Pulau Depok, near which we were anchored, was of sandstone, but many islets in the vicinity, especially to the NE., were of the characteristic limestone formation.

1. *TRERON CURVIROSTRA NIPALENSIS* (Hodgs.)

Treron nipalensis *Salvad. Cat. Birds Brit. Mus.* xxi, p. 34 (1893); *Robinson and Kloss*, p. 674; *Robinson, antea*, vol. V, p. 141.

Treron curvirostra nipalensis, *Baker. Indian Pigeons and Doves*, p. 66, pl. 5 (1913); *Robinson, Ibis*, 1915, p. 721; *Gyldenstolpe*, p. 153.

a. ♂. vix ad. W. side Pulau Telibun, Trang, S.W. Siam, 31st December, 1916. [No. 3797.]

"Iris dull blue, inner ring pink, orbits verditer green, bill yellow, the base crimson, feet crimson."

Fairly common both on this island, Langkawi and Terutau, though these latter specimens as also birds from Trang, are decidedly nearer the typical *T. curvirostra* from Sumatra.

2. *OSMOTRERON VERNANS* (Linn.)

Salvad. tom. cit. p. 60; *Robinson and Kloss*, p. 674; *Robinson, antea*, vol. V, pp. 88, 140; *Robinson, Ibis*, 1915 p. 723.

a. ♂. Lem Pia, north side Telibun Straits, Trang, S.W. Siam. 3rd January, 1917. [No. 3835.]

b. c. ♂, ♀. Telok Wau, Terutau, 24-28th. December, 1916. [Nos. 3725, 3773.]

"Iris outer ring pink, inner blue, feet pinkish maroon, bill greenish grey."

Very common on all the islands and on the adjacent mainland.

3. CARPOPHAGA AENEA AENEA (Linn.).

Salvad. tom. cit. p. 190; *Robinson, antea*, vol. V, p. 141 (1915); *Robinson, Ibis*, 1915, p. 723; *Gyldenstolpe*, p. 155.

a. ♀. Telok Wau, Terutau. 24th December, 1916.
[No. 3731.]

b. ♂. Koh Muk (Pulau Muntia, Trang, S.W. Siam,
7th January, 1917. [No. 3910.]

"Iris dark red, bill slate, feet maroon."

The Bronze Imperial Pigeon was fairly common in all the islands at the time of our visit but hard to get, as it was not flighting and always flew extremely high. The pair preserved are distinctly larger than those obtained in S.E. Siam by Mr. Kloss; wing 235 mm. against 209, but several names are available both for the eastern and southwestern races, if separated. All the Malayan birds belong to the typical Linnean race, whose type locality has been designated by Hartert as the Lesser Sunda Islands.

4. COLUMBA PUNICEA (Tick.).

Columba punicea, *Salvad. tom. cit.* p. 306; *Robinson and Kloss*, p. 674.

Alsocomus puniceus, *Stewart Baker, Indian Pigeons and Doves*, p. 176, Pl. 18 (1913); *Gyldenstolpe* p. 151.

a-c. 2♂, ♀. Koh Muk (Pulau Muntia), Trang, S.W. Siam. 4-5th January, 1917. [No. 3841, 2, 3858.]

"Iris, inner ring yellow, outer orange shading into the inner ring, orbits plum, bill plum at base, whitish horn at tip, feet pinkish maroon.

Two of these birds sexed male have the cap, pale pearly white very sharply defined, the bird marked female having it dull slate. A specimen from Terutau however which is sexed female in all respects resembles the males so that Stewart Barker is probably correct in his statement that the sexes, when fully adult, are identical in colouration. One male has the undersurface amethystine grey, not a somewhat vinaceous chestnut as in the other specimens.

This magnificent pigeon was very common on Koh Muk during the three days we were there, though they only appeared at dusk, probably from the adjacent mainland, roosting in tall mangroves a little way back from the beach in parties of thirty or forty. As Bingham describes it, the note is a booming coo somewhat like that of *Carpophaga aenea* but not nearly so loud or deep.

5. STREPTOPELIA SURATENSIS TIGRINA (Temmin.).

Turtur tigrinus (Temmin. and Knip.) *Salvad. tom. cit.* p. 440; *Robinson and Kloss*, p. 675; *Robinson, antea*, vol. V, pp. 88, 142.

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Streptopelia suratensis tigrina, *Stewart Baker, Indian Pigeons and Doves*, 121, pl. 11 (1913); *Robinson, Ibis*, 1915, p. 724; *Gyldenstolpe*, p. 149.

a. ♀. Pasir Raja, Pulau Lontar, S.W. Siam. 11th January, 1917. [No. 3883.]

"Iris pinkish yellow, orbits dirty white, bill dark blackish horn, feet dull lake."

Very common on Pulau Lontar, also on open spaces on Koh Muk and Pulau Terutau and extraordinarily abundant along the coast of Trang.

Wing 145 mm. slightly larger than most southern specimens.

6. *GEOPHELIA STRIATA* (Linn.)

Salvad. tom. cit. p. 458; *Ogilvie Grant, Fascic. Malay Zool.* iii, p. 121 (1905). *Gyldenstolpe*, p. 150.

a. ♂. Pasir Raja, Pulau Lontar, S.W. Siam. 12th January, 1917. [No. 3901.]

"Iris white, orbits yellowish green, bill bluish slate, feet pinkish violet."

Williamson and others have remarked that this little dove is very rare in Siam proper. It is however common over practically the whole of the Peninsula to its northern extremity in suitable localities. We did not however observe it on Langkawi and Terutau, though I have little doubt that it occurs on the large open areas on the north of the former island.

7. *CHALCOPHAPS INDICA* (Linn.)

Salvad, tom. cit. p. 514; *Robinson and Kloss*, p. 675 *Robinson, antea*, vol. V, pp. 88, 141 (1915), *Gyldenstolpe*, p. 150.

a. ♂. Sungei Udang, Terutau. 8th March, 1909. [F.M.S. Mus. No. 439/09.]

Evidently not very common on the group as the above specimen is the only one that has been obtained in the course of our visits to the islands.

8. *RALLINA FASCIATA* (Raffles).

Sharpe, Cat. Birds Brit. Mus. xxiii, p. 75 (1894); *Robinson, antea*, vol. V, p. 88 (1915).

a. ♂. Pulau Terutau. November 1st 1913.

Found abundantly in the adjacent states of Perlis and Kedah in October and November, 1911, but very much rarer in the more southern parts of the Peninsula.

9. *RALLINA SUPERCILIARIS* (Eyton).

Sharpe, tom. cit. p. 76; *Robinson and Kloss*, p. 10; *Robinson, antea*, vol. VI, p. 225 (1916).

- a. ♀. Ulu Malacca, Pulau Langkawi, 17th February, 1909. [F.M.S. Mus. No. 445/09.]

Very much rarer than the preceding species.

10. AMAURORNIS PHOENICURA CHINENSIS (Bodd.).

Stresemann, Nov. Zool. xx, p. 304 (1913); *Robinson, antea*, vol. V, p. 141 (1915); *id. Ibis*, 1915, p. 725; *Gyldenstolpe*, p. 148.

Amaurornis phoenicura, *Sharpe, tom. cit.* p. 156; *Robinson & Kloss*, p. 11.

- a. ♂. Kuala Kubong Badak, Pulau Langkawi, 17th March, 1909. [F.M.S. Mus. No. 444/09.]

Wing, 162 mm.

11. ARENARIA INTERPRES (Linn.).

Sharpe, tom. cit. p. 92.

Streptilas interpres, *Ogilvie Grant. Fascic. Malay. Zool.* iii, p. 119 (1905).

- a. ♂. Koh Muk (Pulau Muntia) Trang, S.W. Siam. 4th January, 1917. [No. 3846.]

"Iris dark hazel, bill greenish black, legs yellowish orange."

The Turnstone is by no means a common bird on the Malayan coasts and few specimens are on record, though it occasionally occurs in large flocks.

12. SARCOGRAMMUS INDICA ATRINUCHALIS (Jerdon).

Sarcogrammus atrinuchalis, *Sharpe, Cat. Birds Brit. Mus.* xxiv, p. 152 (1896); *Robinson and Kloss*, p. 11; *Robinson, antea*, vol. V, pp. 88, 142.

Sarcogrammus indica atrinuchalis, *Robinson, Ibis*, 1915, p. 725; *Gyldenstolpe* p. 142.

- a. ♀. Telok Wau, Terutau. 17th December, 1916. [No. 3651.]

"Iris hazel, bill and wattles pale crimson, anterior half of bill black, tarsi pale yellow."

Very common throughout the northern half of the Peninsula extending further to the south on the Eastern side, and along the Pahang River, possibly because there is more open ground, suitable for the species in these districts.

13. SQUATAROLA HELVETICA (Linn.)

Sharpe, tom. cit. p. 182.

Squatarola squatarola, *Gyldenstolpe*, p. 143.

- a. ♀, Koh Muk (Pulau Muntia) Trang, S. W. Siam. 5th January, 1917. [No. 3857.]

The Grey Plover is not such a rare visitor to the coasts of Siam and the Malay Peninsula as Gyldenstolpe's note would

imply. It can generally be met with in Klang Straits during the months November to February and has also been noted at numerous other localities between Malacca and the Kedah River.

14. *OCHTHODROMUS MONGOLUS PYRRHOTHORAX* (Gould).

Ochthodromus pyrrhorthorax, *Sharpe, tom. cit.* p. 226; *Robinson and Kloss*, p. 12, *Robinson, antea*, vol. V, p. 142 (1915).

Aegialitis mongolicus, *Ogilvie, Grant. Fascic. Malay. Zool.* iii, p. 118 (1906).

Ochthodromus mongolus, *Gyldenstolpe*, p. 144.

a-b. 2 ♀. Koh Muk (Pulau Muntia) Trang, S. W. Siam. 4th January 1917. Nos. 3843, 4.

"Iris dark hazel, bill black, feet dirty slate."

I am doubtful if the typical race of this plover, for this form is not more than a subspecies, is ever found west of North Borneo. I have certainly, with one very doubtful exception, seen none from any part of the Malay Peninsula, all being referable to the present race which, as Sharpe points out, has a slightly longer tarsus.

15. *AEGIALITIS ALEXANDRINA PERONI* (Bp.)

Aegialitis peronil (Bp.); *Sharpe, tom. cit.* p. 274; *Gyldenstolpe*, p. 144.

Aegialitis alexandrina, *Robinson, antea*, vol. V, p. 142; vol. VII, p. 70 (1916).

a-b. ♂ ♀ ad. Burau, N. W. Langkawi, 23rd April, 1911.

c. ♀. W. side Pulau Telibun, Trang, S. W. Siam. 2nd January, 1917. [No. 3815.]

"Iris dark hazel, bill black, feet slate."

Until *Gyldenstolpe*, (*loc. cit.*) identified a pair of plovers obtained at Koh Lak in Peninsular Siam as this species I had hitherto regarded our fairly considerable series as a tropical resident race of *Ae. alexandrina*, which indeed it is.

Seven males from various parts of the Peninsula have a wing of 93-99 mm. and eight females 93-100 mm.

A series from Borneo, the loan of which we owe to the kindness of the Sarawak Museum authorities has the wing in four males 91-94 mm. and in three females (one very worn) 88-94 mm. so that the Peninsular race would appear to be slightly larger. In addition the Peninsular birds have the dark loreal streak much less strongly developed, while the feathers of the mantle are somewhat paler with lighter edgings; the white at the base of the inner primaries is also more extensive. Material from Java and from Timor, which is probably the typical locality, is however required before the mainland race can safely be separated.

Chicks in down, with the parents, were obtained at Tanjong Tombak, Pulau Bintang, Rhio Archipelago on 5th June, 1908.

16. *TEREKIA CINEREA* (Guldenst.)

Sharpe, tom. cit. p. 474; *Robinson and Kloss*, p. 13.

a. ♂. Kuala Kubong Badak, Langkawi, 18th March, 1909.

b. ♀. Telok Apau, Pulau Langkawi, 14th December, 1912.

Very common everywhere along the coast, wherever there are suitable feeding grounds, during the winter months.

17. *TOTANUS CALIDRIS*, Linn.

Sharpe, tom. cit. p. 474; *Robinson and Kloss*, p. 12; *Robinson, Ibis*, 1915, p. 725; *Gyldenstolpe*, p. 145.

a. ♂. Telok Apau, Langkawi. 11th December, 1912.

Very common also at Koh Muk (Pulau Muntia) in January, 1917.

18. *TRINGOIDES HYPOLEUCOS* (Linn.).

Sharpe, tom. cit. p. 456; *Robinson and Kloss*, p. 13; *Robinson, Ibis*, 1915, p. 725; *Gyldenstolpe*, p. 146.

a. ♂. W. side Pulau Telibun, Trang, S. W. Siam. 2nd January, 1917. [No. 3816].

"Iris dark, bill greenish slate, feet slate darker at the joints."

Common everywhere in the Peninsula in suitable localities.

19. *GLOTTIS NEBULARIUS* (Gunn.).

Sharpe, tom. cit. p. 481; *Robinson and Kloss*, p. 13; *Robinson, Ibis*, 1915, p. 725; *Gyldenstolpe*, p. 146.

a. ♀. Koh Muk (Pulau Muntia) Trang, S.W. Siam. 4th January, 1917. [No. 3836].

"Iris hazel, bill grey, feet greenish grey, darker at joints."

The Greenshank is common in suitable localities throughout the coasts of Siam and the Malay Peninsula though not so abundant and very much shyer than the Redshank.

20. *RHYACOPHILUS GLAREOLA* (Gm.).

Sharpe, tom. cit. p. 491; *Robinson and Kloss*, p. 13; *Gyldenstolpe*, p. 146.

a. ♀. Pulau Langkawi. 11th February, 1909 [F.M.S. No. 333/09.]

- b. ♂. Ulu Malacca, Pulau Langkawi. 18th December, 1912.

Not very common anywhere in the Malay Peninsula but apparently more abundant in the northern parts.

21. *GALLINAGO STENURA* (Bonap.).

Gallinago stenura, Sharpe, *Cat. Birds Brit. Mus.* xxiv, p. 619; *Grant Fascic. Malayenses*, Zool. iii, p. 117 (1906); *Robinson and Kloss, Ibis*, 1911, p. 14.

- a. ♂ ad. Langkawi Id. 10th February, 1909.
b. ♂ ad. Langkawi Id. 18th March, 1909.
c. ♂ ad. Langkawi Id. 25th April, 1915.

A winter visitor in very large numbers to the Malay Peninsula where also *G. caelestis* and *G. megala* are also occasionally met with.

22. *XENORHYNCHUS ASIATICUS* (Lath.).

Ogilvie Grant, Cat. Birds Brit. Mus. xxvi, p. 310 (1898); *Gyldenstolpe*, p. 140.

- a. ♀. North side of Telibun Straits, Trang, S.W. Siam. 1st January, 1917. [No. 3808].

"Iris chrome, orbits black, bill black, gular skin crimson lake mottled with black, lores mottled crimson and black feet deep salmon pink."

This specimen was one of a pair that frequented the shore in the neighbourhood of the seaward entrance to the Telibun Straits and which was eventually shot on a sandy lagoon near the sea. The nest, a very large and untidy structure of sticks, was built on a ledge some distance up a precipitous limestone crag. It contained four eggs, which were obtained for us by one of the local "orang laut," a primitive coast-tribe, who are very clever and daring cliff climbers. One was unfortunately broken in the descent. The remaining three were rather hard set, the shells dull or slightly glossy white, heavily pitted especially towards the smaller end. The outline is variable one being much more pointed than the other two.

Measurements.—A 71.5 × 54 mm.

B 70 × 52

C 71 × 52.5

The occurrence of the species in the Malay Peninsula has hitherto rested in three specimens from "Penang," in the British Museum, collected by Cantor. The locality given is almost certainly incorrect and the specimens must either have been aviary birds or collected on the adjacent mainland, probably in Perlis or Trang.

23. *GRAPTOCEPHALUS DAVISONI* (Hume).

Sharpe, Cat. Birds Brit. Mus. xxvi, p. 14 (1898); *Robinson and Kloss*, p. 17; *Robinson, antea*, vol. V, p. 89 (1915).

Sept., 1917.

(?) *Thaumatibis gigantea*, Williamson, *Journ. Nat. His. Soc. Siam*, II, p. 72 (1916).

a. ♂ ad. Pasir Raja, Pulau Lontar, S. W. Siam.
10th January, 1917. [No. 3882].

"Iris orange, crown dark indigo, occiput and ring round neck livid whitish blue, feet deep lake, bill horn."

This bird was one of a pair frequenting an open grassy plain interspersed with bushes near the sea. They were not particularly shy and with a little care were easily approached. It is evidently this species and not *Thaumatibis gigantea*, a much larger bird which was observed by Williamson at Sarahett on the Petchaburi River (*loc. cit. supra*).

Total length 802; wing 422; tail 210; tarsus 97; bill from gape 165 mm. measured in the flesh.

24. STERNA FLUVIATILIS TIBETANA, Saunders.

Sterna tibetana, Saunders, *P.Z.S.* 1876, p. 649; *Blanford, Stray Feath.* V, p. 485 (187); *Hume, op. cit.* viii, p. 158 (1879); *Sharpe, Hand-l. Birds*, i, p. 135 (1899).

Sterna fluviatilis, Saunders, *Cat. Birds, Brit. Mus.* XXV, p. 60, spm. f. (Selangor) (1896); *Blanford, Faun. Brit. Ind. Birds*, iv, p. 318 (1898).

Sterna longipennis, Saunders, *Cat. Birds Brit. Mus.* XXV, p. 69 (spms. u, v. w, from Tonka and Malacca (1896); *Blanford, tom. cit.* p. 319 (1898); *Robinson, Journ. Fed. Malay States Mus.* ii, p. 69 (1907); *id. Hand-l. Birds Malay Penins.* p. 3 (1910).

a ♀ imm. Pulau Terutau. 29th November, 1912.

This race of the European tern, *St. fluviatilis* is not uncommon in the Straits of Malacca from the end of July to January but hitherto only immature specimens have been obtained so that the identification must remain somewhat uncertain. The distinctly reddish feet of the considerable number of fresh specimens that I have examined would appear to exclude *St. longipennis*, Nordm., while the fact that the wing of the majority of Malayan birds exceeds 11 inches (275 mm.) tends to show that our birds cannot be referred to the European *St. fluviatilis fluviatilis*.

25. STERNA SUMATRANA, Raffles.

Sterna sumatrana, Raffles, *Trans. Linn. Soc.* xiii, p. 329 (1822); *Hume & Davison, Stray Feath.* vi, p. 403 (1878).

Sterna melanauchen, Saunders, *tom. cit.* p. 126; *Robinson, antea*, vol. V, pp. 18, 142 (1913-5).

a, b. ♂, ♀ ad. Pulau Langkawi. 27th April, 1915.

Fairly common in the seas round Pulau Langkawi.

There seems little doubt that Raffles' description of *sumatrana* applies to a young bird, little more than a nestling, of this species and that his name will therefore have to displace the generally used *S. melanauchen*.

26. *THALASSEUS BERGII PELECANOIDES* (King).

Sterna pelecanoides, King, *Survey Intertrop. and Western Coasts Australia*, ii, p. 422 (1827).

Sterna bergii, Saunders, *Cat. Birds Brit. Mus.* xxv, p. 89 (1896); Robinson & Kloss p. 11.

Thalasseus bergii edwardsi, Mathews, *Oberholser Proc. U. S. Nat. Mus.* 49, p. 520 (1915).

Thalasseus bergii pelecanoides, Oberholser, *loc. cit.* p. 523.

Sterna bergii pelecanoides, Robinson, *antea*, p. 70.

a-c. 1 ♂ aest., 2 ♀ hiem. Pulau Langkawi, February and March.

d-e. 2 ♂ aest. Pulau Terutau, March.

The specimens dated February and March, which are in full or incipient breeding plumage have the mantle decidedly darker grey than the others or than any of a considerable series in the F.M.S. Museums from the Straits of Malacca southwards to Singapore and from Tioman on the East coast of the Peninsula. The wing in the five specimens ranges from 328—355 mm. and the exposed culmen from 59—61, but the shorter winged birds as is so frequently the case in terns have the tips of the primaries abraded.

The majority of the more southerly specimens, notably those from Tioman, appear to have a larger bill, 61—64 mm. though two are smaller than any of the above specimens from Langkawi etc. measuring 56 mm.

I have in part followed Stresemann (*Nov. Zool.* XXI) in not admitting the validity of *T. b. edwardsi*, Mathews (types from Ceylon) regarding it on the strength of the above specimens from Langkawi merely as a transitional form between *T. b. velox* (Cretzsm.) from the Red sea, and *T. b. pelecanoides* (King) from Australian Seas and not worthy of even a subspecific name. In any event I think that the specimens from the extreme south of Tennasserim listed as *edwardsi* by Oberholser would in all probability be referable to *T. b. cristatus* from China if that form is to be kept distinct from *T. b. pelecanoides*, which is extremely doubtful.

27. *NINOX SCUTULATA SCUTULATA* (Raffles).

Ninox scutulata (part.) Robinson and Kloss, p. 31; *Gyldenstolpe*, p. 121.

Ninox scutulata scutulata (Raffles) Hartert, *Vog. Paluarkt. Faun.* II, p. 992 (1912).

a. ♀. Pulau Dayang Bunting, Langkawi, 8th December, 1916 [No. 3605.]

- b. ♀. Pasir Raja, Pulau Lontar, S. W. Siam, 12th January, 1917 [No. 3893.]

"Iris chrome or lemon, bill horn, cere olive green, feet pale chrome, claws greyish horn."

Examination of the fairly considerable series of Hawk Owls in the Federated Malay States Museums show that they are readily divisible into two series:

(a). A larger form with darker, duller upper surface, the head somewhat greyer than the rest of the upper parts, the white stripes on the under surface more conspicuous. The specimens are dated from October to March and therefore the race is probably only a winter visitor in the Malay Peninsula. = *Ninox scutulata scutulata* (Raffles).

(b). A smaller form with browner upper surface and no distinguishable cap; white stripes on the undersurface less conspicuous. Specimens dated from March to August and therefore, as Hartert surmises, probably a resident form = *Ninox scutulata malaccensis* (Eyton).

Specimens in the Federated Malay States Museums:—

Ninox scutulata scutulata (Raffles).

- a. ♀. Pulau Lontar, S.W. Siam. January. Wing, 216 mm.
- b. ♀. Pulau Dayang Bunting, Langkawi. December. Wing, 200 mm.
- c. ♂. Ginting Bidei, Selangor. October. Wing, 215 mm.
- d. ♀. Batang Padang, South Perak. February. Wing, 224 mm.
- e-f. ♂. Pulau Jarak, Straits of Malacca. March and December. Wing, 217, 214 mm.
- g. ♂. Pulau Jemor, Aroa Ids., Straits of Malacca. October. Wing, 214 mm.

Ninox scutulata malaccensis (Eyton).

- h-j. 2 ♂, ♀ Pulau Battam, Rhio Archipelago. July. Wing, 186, 186, 189 mm.
 - k-l. (?), ♂. Pulau Karimon, Rhio Archipelago. July. Wing, 188, 189 mm.
 - m. ♀. Changi, Singapore Id., July. Wing, 195 mm.
 - n. ♂. Kuala Lumpur, Selangor. March. Wing, 187 mm.
 - o. ♂. Rawang, Selangor. August. Wing, 186 mm.
 - p. ♀. Tanjong Malim, Perak. April. Wing, 201 mm.
 - q. ♂. Langkawi. March. Wing, 196 mm.
- Ninox scutulata borneensis* (Bp.).
- r. ♀. Sungei Paku, Seribas, S.W. Sarawak, Borneo. October. Wing, 172.

28. OTUS BAKKAMOENA LETTIA (Hodgs.).

Gyldenstolpe, p. 120; *Hartert, Vog. Palaarkt. Faun.* II, p. 975 (1913).

a-b. 2 ♀. Pulau Dayang Bunting, Langkawi.
7-10 December, 1916 [Nos. 3602, 3618.]

"Iris brown, bill pale greenish horn, tarsi white, tinged with greyish pink, claws pale horn."

After comparison with a considerable number of specimens of this group from all parts of the Malay Peninsula, south to Singapore Id. and from Sumatra and Borneo I have come to the conclusion that these two birds must be provisionally referred to this race described by Hodgson from the Eastern Himalayas. The toes are slightly, though not very markedly, more feathered than in the southern birds but the size wing 171 and 166 so much exceeds that of any specimen of *O. b. lempiji* (Horsf.) that it is impossible to identify them with that form whose wing never exceeds 157 mm. The two specimens differ widely *inter se*, one having the forehead largely buff while the colour beneath is deeper with strongly marked dark shaft stripes to the feathers of the belly while the other is much paler with transverse vermiculations on the feathers of the belly. I have seen birds closely resembling them both from Bangkok and North Siam and comparison is required with the Hainan form, *O. b. umbratilis*, (Swinh.) and with that from Formosa and South China, *O. b. glabripes* (Swinh.).

The present specimens have of course nothing to do with *Otus sagittatus* (Cass.) of which we have a specimen from Negri Sembilan.

These owls were very common on Dayang Bunting and their hooting was heard throughout the night. They had probably come south on migration as *O. B. lempiji* also occurs in the same region.

29. OTUS BAKKAMOENA LEMPIJI (Horsf.).

Scops lempiji, *Sharpe, Cat. Birds Brit. Mus.* II, p. 91 (1875); *Robinson and Kloss* p. 31; *Robinson, antea*, vol. V, p. 91 (1915).

a. ♀. Sungei Kilim, Langkawi, 25th March, 1909.

This bird is typical *O. b. lempiji* having a wing of 156 mm.; another female from Bandon has the wing 152 and a male from Perlis about 150 mm. These last two were obtained in June and November respectively and probably represent the resident race.

30. OTUS SCOPS MALAYANA (Hay).

Scops malayana, Hay; *Sharpe, tom. cit.* p. 58; *Robinson and Kloss*, p. 31; *id. antea*, vol. VI, p. 226 (1916).

We obtained a pair on Langkawi in February, 1909. Apparently not uncommon towards the north of the Peninsula but very rare in the south.

31. PELARGOPSIS AMAUROPTERA (Pears.).

Sharpe, tom. cit. p. 97; *Robinson and Kloss*, p. 33.

Ramphalcyon amauroptera, *Oberholser, Proc. U. S. Nat. Mus.* xxxv, p. 661 (1909).

a-c. 3♂. Sungei Udang, Terutau, 11-16th March, 1909.

d. ♂. Pulau Dayang Bunting, Langkawi, 7th December, 1916. [No. 3601.]

"Iris greyish hazel, bill, tarsi and eyelids vermilion, claws greyish horn."

This handsome Kingfisher was fairly common on Langkawi and very abundant at Telok Wau, Terutau, though it was not met with outside the narrow littoral belt of mangrove. It has not as yet been recorded from any locality east of the Malay Peninsula, and Langkawi is its southernmost limit. In my experience, even when alarmed it is a very much more silent bird than others of its congeners. Total length 365 mm.

32. ALCEDO ISPIDA BENGALENSIS, Gn.

Robinson, Ibis, 1915, p. 730; *Gyldenstolpe*, p. 115.

Alcedo bengalensis, *Robinson and Kloss*, p. 32.

Alcedo ispida (part.) *Sharpe, tom. cit.* p. 141.

a. ♂. Pulau Paya, between Langkawi and Kuala Kedah, 25th April 1915.

b. ♀. Pulau Dayang Bunting, Langkawi. 8th December 1916. [No. 3604].

c. ♀. Telok Wau, Terutau. 28th December 1916. [No. 3, 779].

d. ♀. W. side, Pulau Telibun, Trang. 3rd January, 1917. [No. 3824].

"Iris dark, upper mandible dark horn, lower reddish or pale vermilion, feet richer vermilion or coral, iris dark or hazel."

Fairly common all along the coast.

33. ALCEDO MENINTING, Horsf.

Sharpe, tom. cit. p. 138; *Robinson and Kloss*, p. 32.

a. ♂. Sungei Udang, Terutau, 8th March 1909. [F.M.S. Mus. No. 449/09.]

This species does not appear to occur in any part of Siam proper or in French Indo-China. In the Peninsula it is very widely distributed but nowhere at all common.

34. CEYX TRIDACTYLA (Pall.)

Sharpe, tom. cit. p. 174; *Robinson and Kloss*, p. 33; *Gyldenstolpe*, p. 114.

- a. ♀. Sungei Kilim, Pulau Langkawi, 23rd March 1909. [F.M.S. Mus. No. 447/09.]
- b. ♀. Kuala Kubong Badak, Pulau Langkawi, 19th March 1909. [F.M.S. Mus. No. 448/09.]
- c. ♀. Telok Wau, Pulau Terutau. 21st December 1916. [No. 3710].

Not very scarce in heavy jungle throughout the peninsula.

A careful examination of the whole series of this genus from the Malay Peninsula in the Museums, together with four specimens from Borneo, does not bear out Mr. Hartert's contentions that three species, viz. *C. tridactyla* (Pall.), *C. rufidorsa* (Strickl.) = *C. euerythra* Sharpe and *C. dillweyni*, Sharpe occur in the Malay Peninsula.* The first two, of course do, though I am inclined to think that the existence of a dark blue post-auricular spot in the type of *C. rufidorsa* proves that it is really an immature *C. tridactyla* and that the proper name for the red-backed form is, after all, *C. euerythra* Sharpe (type from Klang, Selangor). Specimens from the Malay Peninsula which at first sight appear to agree with Mr. Hartert's diagnosis of *C. dillweyni* on closer examination resolve themselves into immature *C. tridactyla* or sub-adult *C. rufidorsa*. The specimens from Borneo in the Museum are all *C. rufidorsa* with no dark frontal spot, no post-auricular blue patch, and the wing coverts mainly rufous.

Parrot,† in some very confused remarks on the subject, has founded another subspecies of *C. rufidorsa*, *C. r. robusta*, on a specimen from Sumatra without sex or exact locality, which he suggests may be a mountain form. It has a wing of 62, which seems its main claim to distinction. There is also an insufficiently described "species" ‡ from East Sumatra.

35. CARCINEUTES PULCHELLUS (Horsf.).

Sharpe, tom. cit. p. 198; *Robinson and Kloss*, p. 34; *Robinson, antea*, vol. V, p. 92; *Robinson*, p. 732.

- a. ♂. Kuala Kubong Badak, Langkawi, 17th March, 1909. [F.M.S. Mus. No. 487/09.]
- b. ♀. Sungei Kilim, Langkawi, 22nd March, 1909. [F.M.S. Mus. No. 489/09.]

Very much rarer in the north of the Peninsula than in the states further south.

36. HALCYON COROMANDA COROMANDA (Lath.).

Halcyon coromandus (Lath.); *Sharpe, tom. cit.* p. 217; *Robinson and Kloss*, p. 34.

* Nov. Zool. VIII, pp. 429-430 (1902).

† Abhandl. der K. Bayern Akad. der Wissenssch II. Kl. XXIV, Bd. I, p. 208 (1907).

‡ *Ceyx enopopygius*, Oberholser, Smiths. Misc. Coll. vol 60, p. 7 (1912) (Aru Bav, East Sumatra).

Entomothera coromanda coromanda, Oberholser, *Proc. U. S. Nat. Mus.* 48, p. 642 (1915).

Halcyon coromanda coromanda, *Gyldenstolpe*, p. 116.

a-b. ♂ ♀ ad. Kuah, Pulau Langkawi. 28th April, 1915.

c d. ♂ ♀ ad. Sungei Udang, Pulau Terutau. February, March, 1909.

The two males have the wing, 105, 110 mm. and the females 108, 111 and are slightly darker than two females from Trang and Selangor which have the wings 116 and 113 mm. A slightly immature male shot in November on Pulau Jemor, Aroa Ids. in the middle of the Straits of Malacca has the wing 113 mm.

Oberholser (*loc. cit.* p. 642) considers the species as "strictly resident" but it is probable that like many other purely intertropical species it performs migrations of limited range. I am therefore inclined to doubt the validity of the race established for Sumatra (East and West), and Banka, *E. coromanda neophora*, Oberholser (*loc. cit.* p. 646). So far as I am able to judge from an adult male shot on 9th October, 1915, at Sungei Pelandok, Paku Seribas, S. W. Sarawak, the Bornean race, *H. c. minor* (Temm. and Schleg.) is quite separable from the typical form by its rich, darker colouration, the upper surface more strongly washed with lilac, and slightly smaller size. I have not as yet been able to examine good specimens from Singapore Island, which is stated by Oberholser to be inhabited by this form.

The species occurs also on Tioman but specimens from that island are too immature to identify subspecifically with any certainty.

37. HALCYON PILEATA (Bodd.)

Sharpe, tom. cit. p. 229; *Robinson and Kloss*, p. 31; *Robinson, Ibis*, 1915, p. 732; *Gyldenstolpe*, p. 116.

a-c. ♂, 2 ♀ Pulau Langkawi, 27th November, 1907. [F.M.S. Mus. 2897-9/07.]

d. ♂. Pulau Langkawi, 10th February, 1909, [F.M.S. Mus. 485/09.]

e. ♂. Telok Apau, Pulau Langkawi, 15th December, 1912.

f. ♂. Pulau Dayang Bunting, Langkawi. 8th December 1916. [No. 3603.]

g. ♀. Telok Wau, Terutau. 29th December, 1916. [No. 3787.]

"Iris dark, bill vermilion, darker at base, tarsi and toes vermilion, the latter darker."

There is extremely little *local* variation in this species throughout its range and a series from Borneo differs in no way from a large number from the Malay Peninsula. *Individual* variation is considerable, the rufous buff of the belly and flanks varying greatly in intensity. It is only very old birds indeed that entirely lose the black, crescentic edgings to the feathers of the sides of the breast indicative of immaturity.

A common rice-field bird wherever it occurs, though also found on the higher reaches of the rivers in deep jungle. Occasionally also on small islands in the Straits of Malacca during the winter months, evidently on migration.

38. HALCYON CHLORIS (Bodd.).

Sharpe, tom. cit. p. 273, Pl. VII, fig. 3; *Robinson, Ibis* 1915, p. 731.

Halcyon armstrongi, Sharpe; *Robinson and Kloss*, p. 34; *Robinson, antea*, vol. V, p. 145; vol. VII, p. 71.

Halcyon chloris armstrongi, *Gyldenstolpe*, p. 117.

a-b. ♂, ♀. Burau, N. W. Langkawi, 13-14th December, 1916. Nos. 3627, 3640.

c. ♂. Pasir Raja, Pulau Lontar, S. W. Siam. 12th January 1917. No. 3896.

"Iris black, upper mandible white, basal two-thirds, lower mandible pinkish white, feet grey."

There is little to add to what has already been written on the variability of the Indo-Malayan races of blue-and-white Kingfisher. The three specimens listed above differ considerably, one having the ear-coverts almost black, a greenish black band round the nape continuous with them, while in the other the ear-coverts are much more bluish green and the nuchal collar is very narrow and barely visible. The flanks are pure white with no trace of the buffy tint present in the bright blue birds characterised as *H. humii*, Sharpe. The mantle in all is greenish blue but the wings and wing coverts are pure blue. Wing 106, 102, 101 mm.

39. PYROTROGON ORESKIOS UNIFORMIS, *subsp. nov.*

Harpactes oreskios (Temm.); *Ogilvie Grant, Cat. Birds Brit. Mus.* XVII, p. 494 (1892).

Pyrotrogon orescius, *Robinson and Kloss*, p. 39; *Robinson, Ibis*, 1915, p. 736, *Gyldenstolpe*, p. 105.

a-b. 2♂. Burau, N.W. Langkawi. 13th December, 1916. Nos. 3628, 9.

c-i. 3 ♂, 1♀. Telok Wau, Terutau. 25-27th December, 1916. Nos. 3736, 3740, 3755, 6.

"Iris grey, bill, feet and orbits smalt, culmen black."

Dimensions of four males; TL. 274-299; W, 124-128; T, 150-174; B, 23.5-24; TS, 13.5-14 mm.

Sept., 1917.

Fairly common on both the above islands.

A comparison of the above series and seventeen other specimens from various parts of the Malay Peninsula with nine specimens from Eastern Java (Idjen massif, nr. Banjoewangi) show that it is readily possible to distinguish the Malayan and Siamese from the typical Javan form, in that, both in males and females the rump and upper tail covert are concolorous with the back and not strongly tinged with zanthine orange. Dimensions are practically identical.

Types: Adult male, Lamra, Trang, Siamese Malaya, collected on January 10th, 1910.

Adult female: Gunong Jerai (Kedah Peak), Kedah, 2,800 ft. to 3,500 ft. collected on December 2nd, 1915.

Remarks: It is possible that *Oreskios gouldi* quoted by Ogilvie Grant, (*loc. cit.*) as of *Bp. Consp. Vol. Zyg. p. 14* (1854) applies to this bird, but I have no access to the reference. The name, however, is of earlier date as it is quoted by Bonaparte in 1850 (*Consp. Av. 1, p. 151*) as a synonym of *Trogon oreskios* and attributed to Swainson, though I cannot trace the quotation. I prefer, therefore, to regard it as a *nomen nudum*.

40. DICHOCEROS BICORNIS^v (Linn.)

Ogilvie Grant, Cat. Birds. Brit. Mus. XVII, p. 355 (1892); *Robinson and Kloss, p. 35*; *Robinson, Ibis, 1915, p. 733*; *Gyldenstolpe, p. 113*.

a. ♂. W. side Pulau Telibun, Trang, S.W. Siam, 2nd January, 1917. [No. 3911.]

Common on Terutau, Langkawi, Telibun and Lontar, but nearly always flying very high or feeding on very lofty trees and therefore difficult to procure.

41. RHYTIDOCEROS UNDULATUS (Shaw).

Ogilvie Grant, tom. cit. p. 382; *Robinson and Kloss, p. 36*; *Robinson, Ibis, 1915, p. 733*; *Gyldenstolpe, p. 113*.

a. ♂. Pasir Raja, Pulau Lontar, S.W. Siam, 12th January, 1917. [No. 3912.]

Also common on the islands.

42. ANTHRACOCEROS ALBIROSTRIS (Shaw and Nodder.)

Anthracoceros malabaricus, Grant, tom. cit. p. 365; *Robinson and Kloss, p. 35*.

Anthrococeros albirostris, Robinson, Ibis, 1915, p. 734; *Gyldenstolpe, p. 112*.

a. ♀. Burau, N.W. Langkawi. 13th December, 1916. No. 3631.

"Iris hazel, bill and casque ivory, black at tip and base, feet pale plumbeous with a greenish cast."

Common on Langkawi, Terutau and Pulau Butang in the Butang Archipelago, west of Langkawi.

The island specimens seem smaller than a male from Trang which approaches the larger Himalayan form *A. affinis* (Blyth), wing about 305 against a maximum of about 260 in the island birds.

43. EURYSTOMUS ORIENTALIS ORIENTALIS, Sharpe.

Eurystomus orientalis, Sharpe, *Cat. Birds Brit. Mus.* XVII, p. 33, pl. II, fig. 1 (1892); *Robinson and Kloss, Ibis*, 1911, p. 32; *Stresemann, Nov. Zool.* XX, pp. 298-301 (1913); *Robinson, antea*, vol. V, p. 144 (1915).

a. ♀. Koh Muk (Pulau Muntia), Trang, S.W. Siam. 6th January, 1917. No. 3859.

b. ♂. Pasir Raja, P. Lontar, S.W. Siam. 10th January, 1917. No. 3871.

"Iris hazel, bill coral, black tip, feet coral."

Fairly common in all localities; also obtained at Pulau Terutau and P. Langkawi in former years from November to April.

I have again carefully gone through the considerable series of Rollers in the F.M.S. Museum and find that they have been collected in every month of the year, except June to September. There are, however, specimens dated July from Malacca in the British Museum, collected by Davison.

The series readily split on the general characters given for *E. orientalis* and *calonyx*, viz., the greater amount of blue on the outer tail feathers and inner secondaries in the latter form, but there is also another character and that even more marked, viz., the greater amount of blue on the primary coverts in *calonyx*, these feathers being never more than lightly edged with deep blue in *orientalis*.

There is no doubt that both races are migratory in the Malay Peninsula and that *E. orientalis orientalis* breeds in the country also, which *E. o. calonyx* almost certainly does not.

43. MEROPS VIRIDIS, Linn.

Merops sumatranus, Raffles, *Sharpe, tom. cit.* p. 61; *Robinson and Kloss*, p. 37; *Robinson, antea*, vol. V. pp. 92, 146.

Merops viridis, *Hartert, Nov. Zool.* xvii, p. 482 (1910).

a. ♀. imm. Pulau Langkawi, 8th February, 1909.
F.M.S. Mus. No. 281/09.

In view of the fact that this species does not occur in Tenasserim or so far as is known further north in the Peninsula than Bandon, while there are no recent records from Siam proper, occurrences in Southern China and Lower Cochin China are open to doubt. The records of Oustalet and others are more likely to be referable to migratory specimens of the Philippine *M. bicolor*, Bodd.

It is unfortunate that we should have to transfer the name "*viridis*" from one well known species of Africa and India to this species but Hartert's statements cannot apparently be gainsaid. It is to be hoped, however, that some enthusiastic splitter will be found to discern differences between typical Javan birds and others from the Malay Peninsula, Borneo and Sumatra, as even the most austere lumpers would view the race with an indulgent eye and we should be able to return to the more familiar name *sumatranus* for the local form, with a clear conscience, even if it was only used as a subspecific title.

44. *MEROPS PHILIPPINUS*, Linn.

Sharpe, tom. cit. p. 71; *Robinson and Kloss*, p. 37; *Robinson, antea*, vol. v, pp. 146.

Merops superciliosus philippinus, *Gyldenstolpe*, p. 110.

a-b. 2♀. imm. Telok Wau, Terutau. 18-20th December, 1916. Nos. 3656, 3674.

"Iris carmine, bill black, feet greyish black."

Other specimens in the museum from Pulau Terutau are dated February and March. In the south of the Peninsula, probably from about the latitude of Terutau, this Bee-eater is almost certainly only a winter visitor, or at any rate is very rare at other seasons, all the specimens in the museums being dated from October to March. Further north it begins to be a resident form, as it was common on Koh Samui and Koh Pennan, islands in the Bandon Bight, about Lat 9°N., in May, 1913.

45. *MELITTOPHAGUS LESCHENAUTI SWINHOEI*, Hume.

Melittophagus swinhoii, *Sharpe, tom. cit.* p. 55; *Robinson and Kloss*, p. 36; *Robinson, antea*, vol. v, p. 92; *Robinson, Ibis*, 1915, p. 734.

Melittophagus leschenaulti swinhoei, *Gyldenstolpe*, p. 110.

a. 3. Telok Wau, Terutau, 25th December, 1916. [No. 3739.]

"Iris carmine, bill and feet black."

Common also at Langkawi, whence specimens have been obtained in the months of February, April, November and December.

Immature birds have the chestnut bay of the forehead mingled with greenish, the throat paler and the chestnut colour of the lower throat preceding the black patch not nearly so marked.

This species has never been found further south in the Peninsula than Parit, central Perak, whence we have two specimens shot in September, 1911. It occurs neither in Borneo or Sumatra but reappears in a slightly altered form in Java and Bali as the typical *M. leschenaulti* (Vieill.)

46. *CAPRIMULGUS MACRURUS BIMACULATUS* (Peale).

Caprimulgus bimaculatus, Peale. *U. S. Expl. Exped.* viii, p. 170 (1848).

Caprimulgus ambiguus, Hartert, *Ibis*, 1896, p. 373; *Robinson and Kloss*, p. 37; *Robinson, Ibis*, 1915, p. 733.

Caprimulgus macrurus bimaculatus, Oberholser, *Proc. U. S. Nat. Mus.* 48, p. 595 (1915). *Gyldenstolpe*, p. 109.

a. ♂. ad. Pulau Langkawi, 1st December, 1907. F.M.S. Mus. 2896/07.

b. ♂. vix. ad. Pulau Langkawi, 3rd March, 1909. F.M.S. Mus. No. 276/09.

In the paper quoted above Mr. Oberholser has revived a name of Peale's for this common Malayan goatsucker, which had escaped Mr. Hartert's attention and has shown that in all probability the specimen came from the vicinity of Malacca and not from Singapore as stated.

The fairly large material in this museum bears out his contentions, in that a specimen from Pulau Besar, Malacca, agrees with other specimens from further north in the Peninsula and differs from three from Singapore Id. including an actual topotype of *C. m. anamesus*, Oberholser (loc. cit. p. 593), from Tanjong Katong, in being decidedly larger. The latter race is probably valid but larger series from Singapore and Sumatra require comparison with series from Borneo. Should they prove identical, as may not improbably be the case, they will have to bear the name *C. m. salvadorii*, Sharpe (*Proc. Zool. Soc. London*, 1875, p. 99, pl. 22, fig. 1). The large pale form, *C. m. albonotatus*, does not come down south into the Malay Peninsula or even into Southern Siam.

47. *CAPRIMULGUS INDICUS JOTAKA*, TEMM. & SCHLEG.

Caprimulgus jotaka, Hartert, *Cat. Birds Brit. Mus.* xvi, p. 552 (1892); *Robinson and Kloss*, p. 37.

Caprimulgus indicus jotaka, Hartert, *Vog. Palaarkt.* Heft. VII, p. 855 (1912).

a-b. ♂. vix. ad. ♀ ad. Telok Wau, Terutau. December 21st 1916. [Nos. 3704. 5.]

These specimens are rather small (male, wing, 196, female, 193) but the former is hardly adult as shown by the buffy borders to the white spots on the primaries. According to the limits given by Hartert they would fall to *C. indicus indicus* (Lath.), the Indian western form. In view of the dimensions of four birds from the adjacent island of Langkawi shot in the months December to March (203-211 mm) I do not however think this is really the case.

The species occurs in the south of the Malay Peninsula (but apparently only at considerable altitudes) and on islands of the Straits of Malacca but only during the months October to March.

The whole series agree well in dimensions with the specimen from Chounghthanoung (between Mergui and Pakchan) Tenasserim, (wing, 7.9 in = 204 mm.) to which Hume (*Stray Feathers*. iii, p. 318 note, 1875) gave the name *Caprimulgus innominata*. As he has pointed out specimens from the Malay Peninsula and Tennasserim are certainly intermediate in size between specimens of *C. indicus indicus* (Lath.) and *C. indicus jotaka* (Temm. & Schleg.) in their breeding areas, and it would be interesting to ascertain if these intermediate-sized birds have themselves a distinct breeding area, in which case *C. indicus innominata*, Hume would be a fairly well defined subspecies. In default of this information I prefer to leave the question open.

48. COLLOCALIA FRANCICA GERMAINI (Oust.).

Collocalia germaini, Oustalet, *Bull. Soc. Philomath. Paris* pp. 1-3 (1876); *Hartert*, *Ibis*, 1896, p. 376.

Collocalia francica merguiensis, *Hartert*, *Cat. Birds Brit. Mus.* xvi, p. 453 (1892) *Robinson*, *antea*, 7, p. 146 (1914).

Collocalia francica germaini, *Gyldenstolpe*, p. 106.

a-b. ♀. Pasir Raja, Pulau Lontar, S. W. Siam,
11th January, 1917. [Nos. 3880, 3885.]

"Iris dark hazel, bill black, feet purplish brown."

These two birds, wing 122 and 121, agree closely with the large series obtained by us on the islands of the Bandon Bight in 1913, and which were named *C. merguiensis*, Dr. Hartert's statement that this race was identical with *C. germaini*, Oustalet, having escaped our notice. The race is fairly distinct, being marked by having the pale rump band with clearly defined shaft stripes but is close to *C. f. inexpectata*, Hume, which is found on the Tioman group of islands and on the coast of Johore, but was originally described from the Andamans. This race however has the rump band very inconspicuous, often indeed hardly discernible, and may be the form that Oberholser has referred to *Collocalia fucifaga vestita* (Less.) (*Proc. U. S. Nat. Mus.* 42, p. 15 (1912)) allocating to it specimens from Sumatra. East Johore and Simalur.

Both this and *C. innominata*, which can scarcely be distinguished in life and on the wing, were very abundant in all the limestone islands along the coast, the caves in which they breed being annually leased out to Chinamen at considerable rentals.

49. COLLOCALIA INNOMINATA, Hume.

Hartert, *tom. cit.* p. 503.

a-b. ♂. ♀. Pulau Belitung, S. W. Terutau, 22nd
December, 1916. [Nos. 3701, 2.]

Nesting in very great numbers on this limestone island, which is riddled with caves and is the "Spire Island" of the British Admiralty Charts.

This species [with the exception of *C. gigas*, Hartert and Butler,* which is only known from two specimens, the type from the Semangko Pass and another from Java (wing 157 mm.)], is the largest of the local species. The two specimens listed above have wings of 129 and 131 mm. It is common on the mountains from Larut in Perak to Selangor and has also been obtained on the coast of Selangor at Tanjong Karang.

50. *CYPSELUS SUBFURCATUS*, Blyth.

Micropus subfurcatus, Hartert, *Cat. Birds Brit. Mus.* xvi, p. 456 (1891).

Apus affinis subfurcatus, Hartert, *Vog. Pal. Faun.* ii, p. 843 (1912).

a-b. 2 Koh Muk (Pulau Muntia), Trang, S. W. Siam. 5th January, 1917. Nos. 3855, 6.

"Iris and bill black, feet dark purplish flesh, toes black."

This species was exceedingly common on the cliffs of Koh Muk, where it built its untidy nests made of feathers and grass stems in the cracks of overhanging rocks at varying heights above the sea while the *Collocalia* built far inside the caves in total darkness.

While dealing with this genus it may be mentioned that the male of *Cypselus pacificus* obtained on Kedah Peak in December, 1915 (antea vol. vi, p. 226) agrees in all its characters with the subspecies *C. pacificus cooki*, described by Major Harington† from Goteik, Northern Shan States, where it was found breeding.

Our bird has the wing 163 and outer tail feathers 83 against 170 and 75 in the type, the white rump band very narrow with black shaft stripes and the white of the throat much restricted with marked shaft stripes, the mantle deep glossy black. These characters however occur also, though to a lesser degree, in a bird from the Semangko Pass shot in February, 1908.

It appears to me not improbable that Harington has compared a very adult bird in fresh pelage (his specimen was breeding) with younger birds. The size is not materially more than that of Malayan specimens, which vary from 163-176, while Hartert (loc. cit) gives 176-184.5 for the wing of the species as a whole.

Specimens from Koh Pennan, shot in May, are much browner and duller.

51. *CACOMANTIS SEPULCHRALIS SEPULCHRALIS* (S. Müll.).

Cacomantis sepulchralis (S. Müll.); Finsch, *Notes Leyden Museum* XXII, p. 82 (1900).

Cacomantis merulinus (part.) Shelley, *tom. cit.* p. 268.

* Bull. Brit. Orn. Club. XI. p. 65 (1901).

† Bull. Brit. Orn. Club. XXXI. p. 57 (1913).

Cacomantis sepulchralis sepulchralis, *Stresemann*,
Nov. Zool. XIX, pp. 332-334 (1912).

a. ♂ ad. Koh Muk (Pulau Muntia) Trang, S. W.
Siam. 4th January, 1917. No. 3838.

"Iris orange, orbits lemon, bill black at tip and on
culmen, remainder yellowish brown, feet dull orange."

Total length 213; wing, 112; tail, 118; bill from gape,
24; tarsus, 16 mm. Stresemann (loc. cit.) in his careful review
of this group does not recognize this species as occurring on
the mainland of Asia. The present bird, however, agrees
closely with a small series collected in Western Java, differing
only in being of a somewhat clearer gray above, less glossed,
with an oily green lustre, which is very apparent in some
Javanese birds.

52. *SURNICULUS LUGUBRIS DICRUROIDES* (Hodgs).

Surniculus lugubris (part), *Shelley*, *tom. cit.* p. 227,
Robinson and Kloss, p. 39; *Robinson*, *Journ. Fed. Malay States*
Mus. ii, p. 176 (1909).

Surniculus lugubris dicruroides (Hodgs), *Gyldenstolpe*,
p. 102.

♂ ad. Pulau Langkawi, December, 1907.
[F.M.S. Mus. 2928/07.]

a. ♀ ad. Pulau Langkawi, February, 1909.
[F.M.S. Mus. 460/09.]

b. ♀ ad. Burau, N. W. Langkawi, 14th Decem-
ber, 1916. [No. 3644.]

♂ ad. Pulau Terutau, 1st December, 1907.
[F.M.S. No. 2927/07.]

c-e. ♂ 2 ♀ ad. Telok Wau, Terutau, 20-26th
December, 1916. [Nos. 3673, 3741-2.]

f-g. ♂ ♀ ad. Pulau Telibun, Trang, S. W. Siam,
2nd January, 1917. [Nos. 3818-20.]

h-i. 2 ♂ ad. Chong, Trang, S. W. Siam, 3-4th
December, 1909. [F.M.S. Mus. Nos. 63,
122/10.]

j. ♂ ad. Padang Sireh, Perlis, Senggora border,
21st November, 1911.

k-m. 2 ♂ ♀ ad. Pasir Raja, Pulau Lontar, S. W.
Siam, 11-12th January, 1917. [Nos. 3887,
3899, 3900.]

"Iris hazel, bill black, feet purplish slate."

Dimensions:—

Males. TL.—, 246, 253, 247,—,—,—, 256; W. 133, 132,
142, 135, 142, 136, 134, 136, 135; T. 136, 129, 137, 138, 129,
129, 135, 133, 138; B. 27, 28, 25,—, 25, 26,—, 25, 29; TS.—, 18,
18, 18,—,—,—, 17.

Females. TL.—,248,—,245, 258, 247; W. 128, 143, 132, 140, 133, 135; T. 114, 129, 128, 129, 131, 132; B. 24, 26, 27, 25, 5, 27, 27; TS.—,17,—,17, 5, 17, 17.

Stresemann (Nov. Zool. XX, p. 340) has separated the form from the south of the Peninsula, (type from Bentong, Pahang) as *Surniculus lugubris brachyurus* as having a wing averaging about 124 mm. with a tail always shorter than the wing. He includes in this race the birds from Borneo and Sumatra, confining the typical *S. lugubris* of Horsf. to Java, Bali and Ceylon, which is rather an anomalous distribution.

Our series from the lowlands of the south of the Peninsula is unfortunately somewhat deficient in adult birds; a male from Penang has the wing 128, tail 127, a male from Ulu Selama. wing 119, tail 116; a male from Tanjong Malim, 126, tail 123, a male from Kuala Tembeling, Pahang, close to the type locality, wing 119, and tail 114, and two males from Temengoh, North Perak, wing 117, 120, tail 118. A female from Pulau Jemor in the Straits of Malacca, near the coast of Sumatra, has the wing 135 and the tail 130, while two males from West Sumatra have the wing 126, tail 123 and a female, tail 123, wing 123. These specimens certainly bear out Stresemann's diagnosis.

Specimens from the mountains of the Peninsula where the species breeds are however emphatically not this race as two males from the Semangko Pass on the borders of Selangor and Pahang measure wings, 146, 138; tail, 138, 135, and must be referred to the Himalaic form as also one from Taiping shot in January, wing 143, tail 138 mm.

So far as the evidence goes it appears that two races are quite distinct viz. *Surniculus lugubris*, Horsf. from Java and Bali, which has possibly become very slightly modified in Sumatra, Borneo, and the South of the Malay Peninsula at low levels (*S. l. brachyurus*) and *S. lugubris dicruroides* from the Himalayas, through the Indo-Chinese Countries to the north of the Malay Peninsula and southwards along the main range at high elevations. Judging from analogy the Ceylon and Malabarese specimens will probably also prove separable. These conclusions are substantially those come to by Stresemann from the study of the very large material in the British and Tring Museums.

53. CENTROPUS SINENSIS INTERMEDIUS (Hume).

Centrococcyx intermedius, Hume; *Stray Feath* i. p. 454 (1873).

Centropus sinensis (Steph.); *Shelley tom. cit.* p. 343; *Robinson and Kloss*, p. 41.

Centropus sinensis intermedius, Stresemann, *Nov. Zool.* XX, p. 322 (1913); *Robinson, antea*, vol. v, pp. 93, 146; *Gyldenstolpe*, p. 103.

a. 1 ♂ Koh Muk (Pulau Muntia) Trang, S. W. Siam, 5th January, 1917. [No. 3847.]

b-c. ♂ ♀ Pasir Raja, Pulau Lontar, S. W. Siam, 12th January, 1917. [Nos. 3892, 3898.]

"Iris carmine, bill and feet black."

Male. TL.—, 481; W. 201, 203, T. 248, 240; B. 45, 48; TS. 51, 52.

Female. TL. 524; W. 205; T. 284; B. 45; TS. 50.

These specimens differ from the southern *C. s. bubutus*, Horsf. in the characters previously assigned viz. slightly shorter wing, markedly shorter but much broader tail, and the purer, less ochraceous chestnut tint of the wings and scapulars. The two races of course grade into each other but a bird from Lenggong in Upper Perak decidedly belongs to the southern form.

54. RHOPODYTES SUMATRANUS (Raffles).

Shelley, tom. cit. p. 391.

a-b. ♂ ♀ Lem Pia, N. Side Telibun Straits, Trang, S. W. Siam, January 2nd, 1917. [Nos. 3826, 7.]

"Iris pearl, orbits orange red, fading posteriorly into yellow bill sea green, feet, greenish slate."

Climbing about in the characteristic awkward manner in a very thorny tree in an open plain.

The species is here approaching the northern limit of its range. The Museum also possesses a male from Krong mon, interior of Trang, shot on 17th February, 1910 which has been omitted in the list given by Mr. Kloss and myself (*Ibis*, 1911, p.)

55. COCCYSTES COROMANDUS (Linn.).

Shelley, tom. cit. p. 214; Robinson and Kloss, p. 39; Gyldenstolpe, p. 101.

a. ♀ ad. Burau, N. W. Langkawi. 12th December 1916. No. 3621.

b-d. ♂ ad. Telok Wau, Terutau. 18th-28th December 1916. Nos. 3660, 3760, 3781.

e. ♀ ad. Pulau Telibun, Trang, S. W. Siam. 1st January 1917. No. 3805.

"Iris hazel, bill black, feet slate."

Male. 383; W. 158; T. 230; B. 35; TS. 25.

Female. TL 374, 388; W. 158, 162; T. 227, 234; B. 33, 34. TS. 27, 24.

Our series in the Museum shows no confirmation of statements by Shelley and Legge that there is a sexual difference in size in this species but we are very deficient in females, nor apparently is there any difference in the colour of the sexes when specimens in a similar condition of plumage are

compared. Worn specimens show a much more oily green tint on the mantle and inner secondaries.

Common along the coasts of the NW. Malay Peninsula and on the islands of the Straits of Malacca during the winter months, but rare even on migration in the south of the peninsula. Apparently not resident.

56. *CUCULUS MICROPTERUS*, Gould.

Shelley, op. cit. p. 241; *Robinson and Kloss*, p. 40; *Gyldenstolpe, Journ. Nat. Hist. Soc. Siam*, i, p. 232 (1915).

a. ♂ ad. Burau, N. W. Langkawi. 15th December 1916. No. 3646.

"Is, Cere olive green, bill greenish horn, the culmen black, gape yellow, feet chrome yellow."

TL. 305; W, 195, T, 153, B, 30. 5. TS, 18.

In the Malay Peninsula this species has been found breeding in July but as a resident it is scarce. It is, however, common on migration during the winter months.

57. *HIEROCOCCYX SPARVERIOIDES* (Vig.).

Shelley tom. cit. p. 232; *Robinson and Kloss*, p. 40; *Gyldenstolpe*, p. 102.

a. ♀ imm. Pulau Dayang Bunting, Langkawi. 9th December 1916, No. 3616.

b. ♀ imm. Pasir Raja, Pulau Lontar, S. W. Siam, 10th January, 1917.

"Iris light hazel, orbital ring and feet chrome, upper mandible black, lower and gape olive green."

TL. 380, 403; W, 233, 232; T, 220, 229; B, 34, 34; TS, 25, 28.

A fine adult female from Ko Khau, Trang, has the wing (measured dry) 232 and an immature male from the same locality 237. *Shelley loc. cit.* gives the wing of an adult as 8½ in. (210) so that the specimen he measured, if correctly recorded, must have been exceptionally small. *Gyldenstolpe's* adult male from Koon Tan, North Siam, measured 237 mm.

The species is evidently fairly common in the northern third of the Peninsula though probably only in the winter months but is extremely rare south of the latitude of Penang. As is the case with so many migratory species birds that have not yet attained the fully adult plumage appears to be in the great majority.

58. *HIEROCOCCYX NISICOLOR* (Hodgs.).

Robinson and Kloss, p. 40; *Robinson, antea*, vol. v, p. 93.

Hierococcyx fugax (part.) *Shelley, tom. cit.* p. 2361.

a-c. 1 ♀ vix ad. 2 ♂ imm. Telok Wau, Terutau, 18th-24th December 1916. [Nos. 3659, 3728, 3729].

d. 1 ♂ ad. Sungei Udang, Terutau, 8th March, 1909.

TL. 310, 290, 273; W, 176, 171, 172; T, 158, 160, 145; B, 34, 28, 5, 30; TS, 18, 19, 19.

"Iris orange, orbital ring and feet bright chrome, bill yellowish green, tip and culmen green."

Fairly abundant, especially in the winter months, throughout the Peninsula but much commoner in the northern half, where its numbers are evidently largely augmented by migrants. Some birds, however, probably reside throughout the year as the museum possesses adults and extremely young birds shot at Temengoh, Northern Perak, on July 15th.

The most southerly specimen I have been able to examine is an adult male from Gunong Tampin, Negri Sembilan, and this is undoubtedly the present form. Specimens from Southern Johore and from Singapore will however not improbably prove to be referable to the original *Hierococcyx fugax* (Horsf.) described from Java, of which the present form is only the continental race.

The species has not as yet been recorded from any part of Siam except the Peninsula.

59. EUDYNAMIS ORIENTALIS MALAYANA, Cab. and Heine.

Eudynamis orientalis, *Robinson and Kloss*, p. 41; *Robinson antea*, vol. v, p. 146.

Eudynamis honorata (part.) *Shelley, tom. cit.* p. 316; *Robinson Ibis*, 1915, p. 737.

Eudynamis malayana, *Cab. and Heine. Mus. Hein.* iv, p. 52 (1862).

Eudynamis orientalis malayana, *Hartert, Nov. Zool.* X, p. 236 (1903); *Gyldenstolpe*, p. 103.

a, b. 2 ♂ vix ad. Koh Kadan (Pulau Papan),
Trang, S. W. Siam. 7th-8th January, 1917.
[Nos. 3865-6].

"Iris red, bill greenish slate, legs slate."

TL.—415; W, 198, 201; T, 211, 214; B, 38, 40; TS, 34, 34.

Fairly common everywhere.

The races of the Koel have been much discussed from the time of Walden (*Ibis* 1869, p. 239 et seq.), but no great degree of unanimity seems to have been attained. In the Malay Peninsula and possibly in Siam the question is further complicated by the fact that individuals of two different races appear to winter in the country while in addition there are possibly birds who are resident throughout the year, though we have no direct evidence on this point as the species is extremely rare anywhere on the mainland except in the north of the Peninsula.

Most authorities are agreed that in the Indian and Indo-Malayan regions two races occur, viz., one with a wing less than 8 in. (200) mm. and a less robust bill, the male with a greenish gloss and the female with clear white streaks on the head and white bars on the tail.

This race is *Eudynamis orientalis honorata* (Linn.)

The second race is larger, wing up to 8.6 in. (215 mm.) or more, with a more robust bill, with a cast of violaceous in the plumage of the male and the pale parts of the female buffy or rufescent buff.

This race is *Eudynamis orientalis malayana*, Cab. and Heine.

Judged by these standards specimens from Trang (Mainland and Islands), December and January; Koh Pennan and Koh Samui, SW. Siam, May; Pulau Langkawi, February; Pulau Paya near Pulau Langkawi, December; Pulau Jemur, Aroa Ids. November; Pulau Jarak, Straits of Malacca, March; and Pulau Lalang and Pulau Rumpia, Sembilan Ids., November and January; belong to this form, *Eudynamis orientalis malayana*, Cab. and Heine while others from Pulau Langkawi, February; Pulau Paya near Pulau Langkawi, April; Pulau Bidan, near Penang, April; Pulau Jarak, Straits of Malacca, March; Pulau Rumpia, Sembilan Ids. January and March, and Great Redang Id. off the coast of Trengganu, August, belong to *Eudynamis orientalis honorata* (Linn.).

The evidence, such as it is, points to the possibility that there is no resident Koel in the Malay Peninsula, south of Trang, and that the birds that are so numerous on the small islands off the coast are seasonal visitors, the differences noted between them being due to the fact that they have come from widely separated localities, thus accounting for the fact that two apparently different races can be shot on the same small island on the same day. The races of *Eurystomus orientalis* and *Accipiter gularis* afford parallel instances.

60. *CHRYSOCOLAPTES GUTTACRISTATUS INDO-MALAYICUS*, Hesse.

Chrysocolaptes guttacristatus (Tick.) *Hargitt*, *tom. cit.* p. 448 (part.) *Robinson and Kloss*, p. 47; *Robinson, antea*, vol. V, p. 147.

Chrysocolaptes guttacristatus indo-malayicus, *Hesse*, *Ornith. Monatsb.* p. 182 (1911). *Gyldenstolpe*, *Kongl. Svenska. Vetensk. Akad. Handl. Band* 50 No. 8, p. 49 (1913). *Robinson, Ibis*, 1915, p. 739;

- a. ♂ Pulau Langkawi, 11th February, 1909. [F.M.S. Mus. 310/09.]
- b. ♀ Kubong Badak, Pulau Langkawi. 18th March, 1909. [F.M.S. No. 315/09.]
- c. ♂ Sungei Udang, Pulau Terutau. 8th March 1909. [F.M.S. No. 313/09.]

- d-g. 3♂, 1♀ Telok Wau, Pulau Terutau. 18-24th December 1916. [Nos. 3658, 3678, 3723, 3730.]
- h-i. ♂ ♀ Chong, Trang, S. W. Siam 11-15th December 1909. [F.M.S. Mus. Nos. 395, 396/10.]
- j. ♂ vix ad. Koh Samui, Bandon Bight, S. E. Siam. 8th May 1916.

"Iris orange, bill dark greenish slate, feet olive green."

The detailed measurements of two males from Terutau, taken in the flesh are; TL. 287, 290; W, 164, 157; T. 97, 95; B, 50, 54; TS. 31, 28.

The wing and bill (from gape) of the Langkawi specimens taken on the skins are male, W, 156, B. 55; Female, W, 151, B. 49; of three other specimens from Terutau:—Males, W. 159, 154, B. 52, 51. Female, 153, B. 46. Of the Trang specimens, Male, W. 157, B. 49; Female, W. 150, B. 51. Of the bird from Koh Samui, W. 160, B. 52. The dimensions of two males from Tonka (the type locality of the subspecies as given by Hume (*Stray Feath.* viii, p. 154) as 6.15 and 6.3 in. on the wing. viz. 156 and 160, which agrees well with the above series.

In my paper on the collection made by Mr. Kloss in S. E. Siam I unfortunately attributed Tickell's type of *Picus guttacristatus* (Journ. Asiat. Soc. Bengal) iii, p. 578 (1833) to Northern Tenasserim, where the greater part of his collections were made, whereas it was really secured in the jungles of Eastern Bengal. As Hume, Oates and Blanford have pointed out the Southern Indian bird, *C. delessertii*, Blyth, that from eastern Bengal and the low country adjacent, *C. guttacristatus* (Tick.) and the birds from the northern Malay Peninsula approximate in size, though it would appear that the Malay birds on the whole averages smaller, the wing never exceeding 164 mm (6.45 in.) while it is possibly brighter in general tone. *Chrysocolaptes sultaneus* (Hodgs.) from the Himalayas is a very large bird indeed and can fairly claim subspecific rank on these grounds alone though there are no tangible differences in colouration.

In the Malay Peninsula the bird is common in the northern third but is unknown from any locality between Penang and Southern Johore where a small form occurs, W. male, 148, 143; B. 46, 47, which will receive a name in due course. This form also occurs abundantly on the islands of the Rhio-Johore archipelago south of Singapore.

It thus appears that in order of size we have the following forms.

C. guttacristatus sultaneus, Himalayas. Wing averaging 177 mm.

C. guttacristatus guttacristatus. Eastern Bengal, Burma, etc. Wing 161 or perhaps slightly more.

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C. guttacristatus indomalayicus, Southern Siam and North Malay Peninsula, Wing 156 mm. (mean of twelve.)

C. guttacristatus delessertii, Southern India. Wing averaging 152.

C. guttacristatus (unnamed). Extreme south Malay Peninsula, Wing, 145 mm.

The bills grade in even greater ratio.

The maximum range of wing of the species as a whole is from about 190 to 143 or a subspecies to every nine mm. as all authorities seem agreed that no constant differences in colouration can be detected except possibly as noted above, a slightly more intense tint in the Indo-Chinese and Indo-Malayan specimens.

61. *ALOPHONERPES PULVERULENTUS* (subsp.)?

Hemilophus pulverulentus (Temm.); *Hargitt, tom. cit.* p. 494.

Alophonerpes pulverulentus, *Robinson and Kloss*, p. 47; *Robinson, antea*, vol. V, p. 95.

Mülleripicus pulverulentus harterti, *Hesse Ornith. Monatsb.* xix, p. 182 (1912), *Gyldenstolpe*, p. 96.

a-b. ♂ ♀ Pasir Raja, Pulau Lontar, S. W. Siam. 10th January, 1917. [Nos. 3872, 3.]

c. ♂ Telok Wau, Terutau, 27th December, 1916. [No. 3761.]

d. ♀ Pulau Terutau, 3rd December 1907. [F.M.S. Mus. 2907/97.]

e. ♀ Pulau Langkawi, 9th February 1909. [F.M.S. Mus. 309/09.]

f-g. ♂ ♂ Ulu Malacca, Pulau Langkawi 29th December 1912.

I have no access to Hesse's description of this form described from Burmah but which is apparently merely a larger form of the Malayan race, nor have I specimens from Java whence came Temminck's type so these specimens cannot at present be identified subspecifically with any certainty.

The wings of the males are 222, 228, 228 and of the four females, 221, 227, 227, 235, while Glydenstolpe's two males from North Siam which would certainly belong to Hesse's race are given as 242, 235. A female from Kuala Lipis, Pahang is 229 mm.

Compared with a female from Anyut Paku, Seribas, S. W. Sarawak, whose wing measures 230 mm. all the Malayan birds are much greyer and less slaty black, especially on the top of the head, the mantle and undersurface, but this difference may be merely individual.

"Iris dark hazel, orbits slate, tall greenish horn, culmen at base darker feet slate."

62. *GECINUS VIRIDANUS*, Blyth.

Hargitt, tom. cit. p. 47; *Robinson and Kloss*, p. 45; *Robinson, antea*, vol. V, p. 95.

Gecinus weberi, *Muller, Orn. Ins. Salanga*, p. 69 (1882).

Picus viridianus (sic) *Gyldenstolpe*, p. 89.

a-e. 1 ♂, 4 ♀. W. side Telibun, Trang, S.W. Siam. 2-3rd January, 1917. [Nos. 3800, 3813-4, 3821-2.]

e-n. 6 ♂, 3 ♀. Koh Muk (Pulau Muntia) Trang, S.W. Siam. 5-6th January, 1917. [Nos. 3839-40, 3848-51, 3863-5.]

n-q. 2 ♂, 1 ♀. Pasir Raja, Pulau Lontar, S.W. Siam. 10-11th January, 1917. [3876-7, 3888.]

"Iris chocolate, upper mandible black, lower yellow, slate at tip, feet olive, orbits slate."

Both bronzy green and olive green types are represented in the series from each island, all the specimens being quite adult.

Two males from Koh Muk present a curious abnormality, having the feathers of the flanks and abdomen largely creamy white, evidently due to partial albinism, which is by no means uncommon among species both of birds and mammals inhabiting small islands in the Malayan area, and presumably to be explained by deterioration of stock due to excessive inbreeding.

In the north of the Peninsula, this species takes the place of *G. vittatus*, which has not been met with north of Langkawi, while the southernmost specimen of *G. viridanus* in our possession was obtained at Pelarit, Perlis. The relation between the two forms is however evidently not subspecific as the large series in the Museums show no evidence of intergradation.

63. *GECINUS VITTATUS EISENHOFENI* (Gyldenstolpe).

Gecinus vittatus (*nec Vieill.*). *Robinson and Kloss*, p. 45; *Robinson Ibis* 1915, p. 738.

Picus vittatus eisenhoferi, *Gyldenstolpe, Ornith. Monatsb.* xix, p. 28 (1916); *id. op. cit.* p. 88 (1916).

a. ♀. Pulau Dayang Bunting Langkawi, 10th December, 1916. [No. 3619.]

Gyldenstolpe (loc. cit.) is probably not incorrect in separating the northern race of this woodpecker from that inhabiting the Southern Malay Peninsula, Java and Sumatra, though the material at his disposal appears to have consisted of a single female with a wing of 142 and a tail of 128.

The present bird has the wing 137 and the tail, which is not completely grown, about 114. Two other females from the

same locality measure W. 137, 135; tail, 125, 115 and two males W. 138, 135, T. 122, 122.

Mr. Kloss' two specimens from S.E. Siam listed by me had the wing about 139. All these birds may be considered as belonging to the above cited northern race, which differs merely in size from birds from the south of the Malay Peninsula which for the present may be taken as representing true *C. vittatus* (typical locality Java) the colour distinctions noted by Gyldenstolpe in his single specimen occurring in both forms indifferently. The dimensions of the southern birds in the F.M.S. Museums from localities ranging from Kuala Selangor to the extreme south of the Peninsula are wing, 127-132 or a mean of 128.2 for eight specimens while the wing of the northern form as indicated by the specimens quoted above ranges from 135-142 with a mean also for eight specimens of 138.2 mm.

64. *CALORHAMPHUS HAYI* (J. E. Gray).

Shelley, tom. cit. p. 50; *Robinson and Kloss*, p. 43.

a-c. 2 ♂. 1 ♀. imm. Pasir Raja, Pulau Lontar, S.W. Siam. 9th January, 1917. [Nos. 3867-9.]

It is very unusual to find barbets frequenting even the larger islands near the coast of the Malay Peninsula and the occurrence of this species at Pulau Lontar was therefore a little surprising.

It seems hardly correct to rank this form from Sumatra and the Malay Peninsula as merely a subspecies of *C. fuliginosus* (Temm.) from Borneo, which differs so markedly in its deep brick red throat, chin and upper breast, as some authors have done. Malayan birds precisely agree with specimens from Korinchi, West Sumatra, and it is difficult to credit Buttkofoer (*Notes Leyden Mus.* ix, p. 17 (1887) who seems to consider that the two species are but plumage stages of one and the same bird. Of the very large series of *C. hayi* from the Malay Peninsula and Sumatra that have passed through my hands I have never seen one that could for a moment be confounded with *C. fuliginosus*, while the same is true of the series of *C. fuliginosus* before me, when compared with *C. hayi*.

Immature birds have the throat and lower surface washed with pale sulphur yellow and the tips of the median wing coverts rufous buff. The bills are black in the males and brownish horn in the females.

65. *XANTHOLAEMA HAEMACEPHALA* (P. L. S. Mull.).

Xantholaema haematocephala, *Shelley, tom. cit.* p. 89; *Robinson and Kloss*, p. 44; *Robinson, antea*, p. 95 (1913).

a-c. 2 ♂ ♀. Pasir Raja, Pulau Lontar, S.W. Siam, 11-12th January, 1917. [No. 3890, 3906, 7].

"Iris hazel, bill black, feet and orbits coral."

These specimens have the wing, 84.5 mm. and I do not see how they are to be separated from typical specimens from the Philippines, with which they agree in size. In any event however there is a name available for the continental bird, viz. *Bucco indicus*, Lath. Ind. Orn. i., p. 205 (1790) which must be applied to Malayan birds, although Parrot has separated the Sumatran bird on the strength of a slightly smaller size which is not altogether borne out by our large series from West Sumatra and on certain differences in colour, some of which we can confirm, the most noticeable being the absence of the conspicuous orange yellow collar beneath the scarlet pectoral patch, which is very noticeable in all the Malayan but barely indicated in any Sumatran specimens, which in addition have the green centres to the feathers of the abdomen and flanks more restricted and the margins of a creamy rather than a sulphury yellow. Parrot's name for this form *Megalaema haemacephala delicata*, (*Abhandl. der Konigl. Bayer. Akad. der. Wissensch.* (II) xxiv. Bd. I, p. 169 (1907) is however antedated by *Bucco rafflesius* Boie, *Brief. Ost. Ind.* No. 15 (1832), of which our Korinchi and Padang coast birds may be regarded as topotypes.

65. *HIRUNDO BADIA*, Cass.

Sharpe, *tom. cit.* p. 166; *Robinson and Kloss*, p. 50; *Robinson, antea*, vol. V, p. 98.

a. Telok Wau, Terutau, 23rd December, 1916.
No. 3721.

"Iris and bill dark, feet dark maroon brown."

Very common indeed both on Langkawi and Terutau and probably all over the Peninsula where there are precipitous limestone hills. Resident throughout the year and not known outside the limits of the Peninsula. A closely allied, but paler and considerably smaller form, *H. hyperythra*, Layard, is resident in Ceylon.

66. *HIRUNDO JAVANICA*, Sparrm.

Sharpe, *Cat. Birds Brit. Mus.* p. 142 (1885); *Robinson and Kloss*, p. 50.

a. Koh Muk (Pulau Muntia) Trang, S.W. Siam,
5th January, 1917. No. 3854.

"Iris dark, bill and feet black."

Found breeding on the cliffs of Koh Muk together with *Cypselus subfurcatus* and *Collocalia* sp. Also common on Pulau Terutau, P. Langkawi and P. Tengah between Langkawi and P. Langkawi.

Common and resident all along the coasts of the Malay Peninsula, according to Hume and Davison rare in Tenasserim but very common in Southern Malaya. Curiously enough not hitherto recorded from Siam proper, though it is mentioned in a List of the Birds of Lower Cochin China by Tirant. Occurs also in the Philippines.

67. *PITTA MEGARHYNCHA*, Schleg.

Sclater, tom. cit. p. 421; *Robinson and Kloss*, p. 48; *Moulton, Journ. Straits Branch. Roy. Asiat Soc.* No. 67, p. 157, No. 311 (1914).

Pitta brachyura megarhyncha, Parrot, *Abh. Konigl. Bayern. Akad. der Wiss.* II. Kl. XXIV, Band. 1, p. 225 (1907).

a. ♂. Kuah, Pulau Langkawi, 27th April, 1915.

b. ♂. Pulau Terutau, 3rd March, 1909.

Though Sclater in the Catalogue and Sharpe in the Hand-list (III, p. 180, 1901) record this species as coming only from Burma, Tenasserim and the Malay Peninsula, the types came from Banka, while Parrot records it, though with some doubt as to identification, from Sumatra, where, however, one would expect to find it in the low lying south eastern districts. Moulton on the strength of a specimen obtained in exchange from the Raffles Museum, Singapore, records it from Borneo, but the authenticity of the label needs confirmation.

The species is, as has been pointed out by many authors, totally distinct from, and not a form of, *P. cyanoptera*, which is often found with it. Besides the striking difference in the size of the bill the present species lacks the black chin-spot and the mesial dark line on the crown which is much duller in colour than in *P. cyanoptera*. The colours beneath are less intense and the white speculum on the wing more extensive. Both Mr. Kloss and myself have found it only in the vicinity of, or actually in, mangrove forest, while its ally is much more widely spread.

68. *PITTA CYANOPTERA*, Temm.

Sclater, Cat. Birds Brit. Mus. xiv, p. 416 (1888); *Robinson and Kloss*, p. 48; *Robinson, Journ. Fed. Malay States Mus.* V, pp. 97, 147 (1914); *Gyldenstolpe* p. 84.

a. ♀. Pulau Dayang Bunting, Langkawi, 9th December, 1916. No. 3614.

b. ♂. Telok Wau, Terutau, 27th December, 1916. No. 3759.

"Iris hazel, bill black, feet pinkish flesh."

Common throughout the Peninsula and Siam at one time or other of the year. Often in very large numbers on very small islands during the winter months.

69. *PITTA CULCULLATA*, Hartl.

Sclater, tom. cit. p. 448; *Robinson and Kloss*, p. 49; *Robinson, antea*, vol. v, p. 97 (1914).

A single somewhat immature female was shot on Pulau Paya, between Pulau Langkawi and the Kedah river, on April 28th, 1915. It is not rare in the north of the Peninsula generally but does not seem to be recorded from Siam proper.

70. PERICROCOTUS CINEREUS, Lafr.

Sharpe, *tom. cit.* p. 83; Robinson and Kloss, p. 55; Gyldenstolpe, p. 74; Hartert *Vog. Palaarkt. Faun.* I. p. 466 (1907).

a-b. 2 ♀. Kuah, Pulau Langkawi, 29th November, 1st December, 1907.

Common all over the Peninsula during the winter months but commoner in the north.

71. HEMICHELIDON FERRUGINEA, Hodgs.

Sharpe, *Cat. Birds Brit. Mus.* iv, p. 132 (1879); Robinson, *Journ. Fed. Malay States Mus.* ii, p. 16 (1906).

Hemichelidon cinereiceps, Sharpe, *Mus.* 1887, p. 441.

Muscicapa ferruginea, Hartert *Vog. Palaarkt. Faun.* i, p. 479 (1909).

a. ♂. Pulau Adang, Butang Archipelago, 20th April, 1911.

b-d. 3 ♀. Pulau Paya, nr. Kuala Kedah, 24-26th April, 1916.

This specimen is common in the high mountains of the Malay Peninsula, all our specimens being dated October to March, but the above specimens, together with one from Pulau Jemor, Aroa Islands, shot in November 1906 are the only ones recorded from low elevations. It is evident, therefore that the species is migrant and not a permanent resident, the above specimens being on passage.

72. ALSEONAX LATIROSTRIS (Raffles).

Sharpe, *tom. cit.* p. 453; Robinson and Kloss, p. 51; Robinson, *Ibis*, 1915, p. 742; Gyldenstolpe, p. 74.

a. ♀. Pulau Dayang Bunting, Langkawi, 9th December, 1916. [No. 3606.]

b. ♂. Telok Wau, Terutau, 19th December, 1916. [No. 3668.]

"Iris black, bill black, the base yellowish, tarsi brownish black."

Common throughout the Peninsula during the winter months.

I have grave doubts as to the validity of *Alseonax siamensis*, Gyldenst. *Ornith. Monatsb.* xix, p. 27 (1916); *loc. cit.* p. 74, founded on two specimens from Ban Hue Pong, Northern Siam. The descriptions read like that of a freshly moulted specimen of the above species but without actual examination of types or topotypical specimens it is impossible to be certain.

73. POLIOMYIAS MUGIMAKI (Temm.).

Poliomyias luteola, Sharpe, *tom. cit.* p. 201; Robinson and Kloss, p. 52.

Muscicapa mugimaki, *Hartert, Vög. Pal. Faun.* i, p. 492 (1910).

a. ♂ imm. Burau, N. W. Langkawi, 14th December, 1916. [No. 3636.]

b. ♂ imm. Telok Wau, Terutau, 28th December, 1916. [No. 3785.]

"Iris dark, bill horn, pinkish at base, feet dark brown."

Common in the Peninsula during the months October to April, immature birds in the dull pelage being in the great majority. We have numerous specimens from Terutau and also an immature male shot on Pulau Butang, Butang group, on April 21st, 1911.

74. *MUSCITREA GRISOLA GRISOLA* (Blyth).

Pachycephala grisola, *Gadow, Cat. Birds Brit. Mus.* viii, p. 220 (1883).

Muscitrea grisola, *Robinson and Kloss*, p. 54; *Robinson, antea*, vol. V, p. 148; *Robinson, Ibis*, 1915, p. 743; *Gyldenstolpe*, p. 78.

Pachycephala grisola grisola, *Stresemann, Nov. Zool.* XX, p. 355 (1913).

a. ♀. Kuala Kubong Badak, Langkawi, 19th March, 1909.

b. ♀. Pulau Langkawi, 16th February, 1909.

c-d. 2♀. Pulau Butang, Butang Archipelago, 20th April, 1911.

e. ♀. Pulau Nipis, Butang Archipelago, 22nd April, 1911.

f. ♂. Pulau Tengah, Butang Archipelago, 23rd April 1911.

All these birds are fully adult, those from the Butang Ids. being in breeding condition. Immature birds shot on Koh Samui, Bandon Bight in May and Pulau Ketam, coast of Selangor, in July, have the outer webs of the inner secondaries rufous brown and the wing coverts tipped and edged with the same colour.

Very common on most small islands near the Malay Peninsula where there is mangrove forest and also along the coast of the mainland in similar situations, but so far as my experience goes never found in dry forest.

There has been much discussion as to the systematic position of this bird. It is certainly not a typical *Pachycephala* but would appear to be best placed in a genus of its own, near to *Niltava* and *Rhinomyias*. If only on zoogeographical grounds, it must be removed from *Pachycephala*.

75. *HYPOTHYMIS AZUREA PROPHATA*, Oberholser.

Hypothymis azurea, Sharpe, tom. cit. p. 274; *Robinson and Kloss*, p. 53; *Robinson*, *antea* vol. V, pp. 99, 148.

Hypothymis azurea prophata, Oberholser, *Proc. U. S. Nat. Mus.* 39, p. 507 (1911); *Gyldenstolpe*, p. 79.

a-b. ♂ ♀. Burau, NW. Langkawi, 14 December, 1916. [Nos. 3632, 3642.]

c-j. 4♂, 4♀. Telok Wau, Terutau, 18-28th December, 1916. [Nos. 3652-3, 3694, 3709, 3938, 3749, 3770, 3786.]

k-l. ♂ ♀. W. side Pulau Telibun, Trang, SW. Siam. 2-3rd January, 1917. [Nos. 3809, 3820.]

"Iris dark hazel, bill and orbits smalt, feet blue grey."

Males range from 72 to 76 mm. in wing measurement, and are very constant in colouration over the whole length of the Malay Peninsula when specimens of a similar age and plumage are compared.

CYORNIS SUMATRENSIS (Sharpe).

Siphia sumatrensis, Sharpe *Tom. cit.* p. 451.

Cyornis sumatrensis, *Hartert*, *Nov. Zool.* ix, p. 550 (1902); *Robinson and Kloss*, p. 51; *Robinson*, *antea*, vol. v, p. 147 (1915); *Gyldenstolpe*, p. 76.

a-e. 4♂, ♀. Pulau Dayang Bunting, Langkawi, 8-9th December, 1916. Nos. 3607, 3609, 3611-13.

f. ♂. Burau, NW. Langkawi, 13th December, 1916. No. 3633.

g-j. 2♂, 2♀. Telok Wau, Terutau, 18-28th December, 1916. Nos. 3654, 3699, 3783-4.

"Iris and bill black, feet livid purplish flesh."

These specimens, with large series obtained from various other localities in the peninsula are very consistent *inter se*, and I have nothing to add to the brief description already given by myself and Mr. Kloss (*loc. cit.*). The wing varies from 70-73 mm. In all, the belly, under tail coverts and under wing coverts are pure unsullied white, therein differing from *C. dialilaema*, Salvad., which has these parts sullied buff, a larger patch of blue on the sides of the breast, a deeper blue last and is also possibly slightly smaller. The females also are quite different.

76. *TERPSIPHONE PARADISI AFFINIS* (Blyth).

Terpsiphone affinis, Sharpe, *tom. cit.* p. 274; *Robinson and Kloss*, p. 53; *Robinson*, *antea*, vol. v, pp. 99, 148; *Robinson*, *Ibis*, 1915, p. 745; *Gyldenstolpe*, p. 81.

a. ♀. imm. W. side Pulau Telibun, Trang, SW. Siam. 2nd January, 1917. [No. 3817.]

b. ♀. imm. Pasir Raja, Pulau Lontar, SW. Siam. 10th January, 1917. [No. 3881.]

"Iris dark hazel, bill, feet and orbits Payne's grey.

These specimens, are apparently birds of the year with the mantle and tail very pale cinnamon rufous but with a rather large bill, so that they are probably not the far Eastern form, *T. p. incii* (Gould) which winters in the Malay peninsula. Wing 83, 84 mm.

In the white plumage *T. p. incii* and *T. p. affinis* are with difficulty separated by the greater amount of black in the edgings of the tail feathers and wing coverts and by difference in size. Birds in the second year plumage are however easily distinguished by the rich maroon mantle and darker under-surface (especially throat) of *T. p. incii*.

77. CYANOPTILA CYANOMELANA (Temm.).

Xanthopygia cyanomelæna, *Sharpe*, *tom. cit.* p. 251.

Cyanoptila bella, *Stejneger*, *Proc. U.S. Nat. Mus.* xv, p. 328 (1892); *Robinson antea*, vol. II, p. 189 (1909).

Cyanoptila cyanomelæna, *Robinson and Kloss*, p. 53.

Muscicapa cyanomelana, *Hartert*, *Vog. Palaarkt. Faun.* I, p. 492 (1909).

a. ♂. ad. Sungei Udang, Terutau. 19th March 1909. F.M.S. Mus. No. 372/09.

No further specimens of this beautiful Flycatcher have been obtained in the Malay Peninsula since the above bird was secured. We have it, however, both from Borneo (Ulu Paku, Seribas, November, and from Korinchi, Sumatra, March).

78. AEGITHINA VIRIDISSIMA (Bp.).

Sharpe, *Cat. Birds Brit. Mus.* vi, p. 55 (1881); *Robinson and Kloss*, p. 55.

a-c. 3♂. Telok Wau, Terutau. 18-26th December 1916. [Nos. 3657, 3752, 3681].

"Iris dark hazel, bill plumbeous, upper mandible black, feet slaty green."

By no means a common bird in the Malay Peninsula, where it keeps much more to deep jungle than its congener, *Ae. tiphia*. This species is here approaching its northern limit, not having been obtained beyond Trang.

79. CHLOROPSIS VIRIDIS ZOSTEROPS, Vig.

Chloropsis zosterops, *Sharpe*, *tom. cit.* p. 24; *Robinson and Kloss*, p. 55.

a. ♂. W. side Pulau Telibun, Trang, S.W. Siam. 2nd January 1917. [No. 3811.]

b, c. ♂, ♀ Pasir Raja, Pulau Lontar, S.W. Siam.
10th-12th January 1917. [Nos. 3879, 3932.]

"Iris hazel, bill black; in the female the lower mandible light horn, feet slate or Payne's grey."

In a review of this group (Nov. Zool. ix, pp. 211-212 (1902) Hartert has established a subspecies. *C. viridis viriditectus*, (type from Baram, Sarawak) for the Bornean form based on the fact that the shoulder spot is glistening green without any bluish gloss, and a considerable series from SW. Sarawak confirms his diagnosis. He considers that Malayan birds should also be placed in this race but in this I cannot agree as the majority of our large series precisely agree in the tint of the shoulder spot with a specimen from Rimbo Pengadang, Bencoolen (Jacobson coll.) which is a topotype of *C. zosterops*, Vig.

80. CHLOROPSIS ICTEROCEPHALA CHLOROCEPHALA, (Wald.).

Chloropsis chlorocephala, Sharpe, *tom. cit.* p. 28, *Robinson and Kloss*, p. 55; *Robinson antea*, vol. V, p. 101; *Robinson Ibis*, p. 745; *Gyldenstolpe*, p. 65.

a. ♂. Pasir Raja, Pulau Lontar, S.W. Siam. 12th January, 1917. [No. 3903.]

"Iris chestnut red, bill black, feet sage green."

Gyldenstolpe (*loc. cit.*) suggests that *C. icterocephala* may also occur on the southern parts of Siamese Malaya. As a matter of fact several specimens were obtained by Dr. Annandale and myself at Bukit Besar in Patani, though Grant in his report* on the collection has accidentally omitted the precise locality. This species meets and intergrades with *C. icterocephala* in Perlis whence we have a pair which it is impossible to refer definitely to either form.

81. IRENA PUELLA CYANEA, Begbie.

Irena cyanea, Sharpe, *tom. cit.* p. 179; *Robinson and Kloss*, p. 56.

a-c. 3 ♂ ad. Burau, NW. Langkawi, 12th-14th December 1916. [Nos. 3620, 3630, 3637.]

d-j. 1 ♂ ad. 4 ♂ imm., 2 ♀. Telok Wau, Terutau. 19th-28th December 1916. [Nos. 3662, 3664, 3671-2, 3689, 3713, 3774.]

"Iris carmine, bill and feet black."

Exceedingly common in heavy jungle on Langkawi and Terutau, while a single specimen was obtained in April, 1915, on the small island of Pulau Paya, near Kuala Kedah.

The series of males moulting into the adult plumage confirms *Gyldenstolpe's* observations on the closely allied race *I. p. puella* from further north (*loc. cit.* p. 66) that the adult livery is acquired by a direct change of colour in the feather without

* Fascic Malay, Zool III, p. 89 (1906).

moult, a possibility that has always been hotly disputed by many biologists.

The southern subspecies is extraordinarily close to the northern and only differs in the relative length of the under tail coverts, which more nearly approach the tip of the tail in the southern than they do in the northern form. There seems to be no tangible difference in size. Wings of Langkawi adult female, 122-128 mm.

82. *HEMIXUS MALACCENSIS* (Blyth).

Sharpe, tom. cit. p. 52; *Robinson and Kloss*, p. 56; *Robinson, antea* vol. V, p. 102 (1915).

a. ♀. W. side Pulau Telibun, Trang, S.W. Siam.
1st January 1917. [No. 3804.]

Quite rare in the north of the Peninsula, whence we have three specimens only, not differing from others from the vicinity of the type locality, Malacca.

83. *MICROTARSUS MELANOCEPHALUS* (Gm.).

Micropus melanocephalus, *Sharpe, tom. cit.* p. 65; *Robinson and Kloss*, p. 57. *Robinson, antea*, vol. v. p. 148.

Microtarsus melanocephalus, *Gyldenstolpe*, p. 66.

a-b. 2 ♂. Pasir Raja, Pulau Lontar, S.W. Siam.
12th January 1917. [Nos. 3904, 5.]

"Iris blue, bill and feet black."

84. *CRINIGER GUTTURALIS OCHRACEUS*, Moore.

Criniger sordidus, *Richmond, Proc. U. S. Nat. Mus.* xxii, p. 320 (1900); *Robinson and Kloss*, p. 57; *Robinson, antea*, vol. v, p. 102 (1915).

Criniger ochraceus, *Moore, Cat. Birds Mus. E.I.C.* i, p. 252 (1854); *Robinson, Ibis*, 1915, p. 746;

Criniger gutturalis sordidus, *Gyldenstolpe*, p. 67.

a. ♀. Burau, N.W. Langkawi, 15th December 1916. [No. 3645.]

"Iris chocolate, bill plumbeous, blackish on culmen, tarsi horny pink."

The Bulbuls of this group are extremely closely allied and the several species described are but little more than ill-defined subspecies. From descriptions, I fail to see in what respects *Criniger henrici*, *Cust. Bull. Mus. Hist. Nat. Paris*, 1896, p. 183, can be distinguished from this form. *Gyldenstolpe (loc. cit.)* lists both, from the same locality, Koon Tan, in Northern Siam.

The present race is common in the Northern Malay Peninsula, becoming slightly differentiated further south.

85. *PYCNONOTUS FINLAYSONI*, Strickl.

Sharpe, tom. cit. p. 144; *Robinson and Kloss*, p. 58; *Robinson, antea*, vol. V, p. 149; *Robinson, Ibis*, 1915, p. 747; *Gyldenstolpe*, p. 69.

a-c. 4 ♂, 1 ♀. Telok Wau, Terutau. 20th-28th December 1916. [Nos. 3675, 3697, 3700, 3720, 3778.]

"Iris chestnut, bill black, feet slate."

Extremely common in the north of the Peninsula, largely replacing *P. analis*, which however also occurs; rare and sporadic in the south.

86. *PYCNONOTUS PLUMOSUS*, Blyth.

Sharpe, tom. cit. p. 152; *Robinson and Kloss*, p. 58.

a-c. West side, Pulau Telibun. 1-3rd. January 1917. [Nos. 3802, 3828, 9.]

"Iris chocolate, reddish or dark red, bill black, feet pinkish brown."

This is the only one of this group of the genus about which no difficulty arises in identification. Colouration is on the whole very constant, though freshly moulted specimens are darker above than others. Tail and wings always strongly washed with olive green and the ear-coverts with pale shaft stripes.

87. *PYCNONOTUS SIMPLEX* (Less.).

Sharpe, tom. cit. p. 153; *Robinson and Kloss*, p. 58; *Richmond, Proc. U. S. Nat. Mus.* 26, p. 506 (1903).

Pycnonotus sp. (?) *Richmond loc. cit.* p. 506.

Pycnonotus olivaceus chloeodis, *Oberholser, Smithsonian Misc. Coll.* vol. 60, p. 11 (1912).

a-c. 3 ♀. Telok Wau, Terutau. 20-29th December 1916. [Nos. 3677, 3732, 3794.]

"Iris Indian red, bill dark horn, feet pinkish yellow-horn."

I have compared these and numerous other Malayan birds with three specimens from the West Coast of Sumatra which can be regarded as typical of *P. simplex* (Less.) and also of *P. olivaceus chloeodis*, *Oberholser*, and can detect no material differences, certainly none that would warrant even subspecific distinction.

The wings of three Sumatran birds are 76, 77, 82, while nine Malayan birds average 81 mm. The Sumatran bird cannot therefore be said to be "larger."

The colour of the irides, relied on by *Richmond* for separation of species, is quite unreliable. Two Sumatran birds recorded by myself have them "white" and a third by *Jacobson* "light orange," while the Terutau birds had them as noted above "Indian Red," but they are undoubtedly all the same form.

In any event the Sumatran bird, if distinct, must be called *P. simplex simplex* (Less.) while the Malayan bird (type from Malacca compared) will be *P. simplex brunneus* (Blyth), *Journ. Asiat. Soc. Bengal* xiv, p. 568 (1842).

88. PELLORNEUM SUBOCHRACEUM, Swinh.

Sharpe, tom. cit. p. 521; *Robinson and Kloss*, p. 59; *Robinson antea*, vol. V, pp. 103, 149; *Robinson Ibis*, 1915, p. 748; *Gyldenstolpe*, p. 748.

a-b. ♂ ♀. Burau, N. W. Langkawi. 12th December 1916. Nos. 3623, 4.

c. ♂. Pasir Raja, Pulau Lontar, S.W. Siam. 11th January 1917. No. 3884.

"Iris chestnut, orbital space sage green, bill horn, lower mandible yellowish, feet pale yellowish flesh.

Exceedingly common over the whole of the northern third of the Malay Peninsula and in the Langkawi group, frequenting low trees in secondary jungle and shrubs and bushes at the edges of open spaces.

The large series in the F.M.S. Museums shows considerable variation in the depth of tint of the buff on the lower surface and in the width and intensity of the black shaft stripes on the breast as is noted by Gyldenstolpe. The differences are apparently due to age and are not correlated with locality.

89. MALACOCINCLA ABBOTTI (Blyth).

Turdinus abbotti, *Sharpe, tom. cit.* p. 541; *Ogilvie Grant Journ. Fed. Malay States Mus.* iii, p. 29 (1908); *Robinson Ibis*, 1915, p. 749; *Robinson and Kloss*, p. 59.

Turdinus olivaceus, *Robinson antea*, vol. V, pp. 103, 149 (1915).

Turdinus abbotti olivaceum, *Hartert, Nov. Zool.* ix, p. 562 (1902).

Turdinus abbotti abbotti (Blyth) *Gyldenstolpe*, p. 57.

a-b. ♂, ♀ Burau, N. W. Langkawi, 12th December, 1916. [Nos. 3625, 3626.]

c-m. 6 ♂, 6 ♀ Telok Wau, Terutau, 20-28th December, 1916. [Nos. 3667, 3682, 3687, 3690, 3692, 3698, 3706, 3733-4, 3750-1, 3771.]

n-o. ♂, ♀ Pasir Raja, Pulau Lontar, S.W. Siam, 12th January, 1917. [Nos. 3908-9.]

"Iris red, reddish chestnut or orange, bill slate, black on culmen, feet flesh or brownish flesh."

Diametrically opposite opinions have been expressed by Grant and Hartert (*loc. cit.*) on the separability of the northern and southern forms of this species, *Turdinus abbotti*, Blyth. *Journ. Asiatic Soc. Bengal.* xvi, p. 601 (1845), type from Ramree Id., Arakan, and *Malacopteryx olivaceum*, Strickland, *Ann. and Mag. Nat. Hist.* xix, p. 132 (1847), type from Malacca.

As I have suggested elsewhere (*Ibis*, 1915, p. 749) much of the discrepancy is probably due to the rapidity with which skins of this and other allied *Timeliinae* species fade.

It would seem to be a fact, however, that the majority of southern birds are dull, therein conforming with the diagnosis of *M. a. olivaceum* (Strickl.) while the majority of those from the north are bright, agreeing with *T. abbotti abbotti* (Blyth). This is not, however, universally true in the present series, as the pair from Langkawi, one from Terutau and one from P. Lontar, the most northerly locality visited, are as dull as any from Kuala Lumpur and other parts of Selangor. The remainder, and also specimens collected in 1915 in Langkawi are brighter birds, having the undertail coverts rich buffy rufous, the rufous buff of the flanks carried up high on the sides of the chest. Birds from Trang vary and ones from Perlis are brighter than Selangor and Pahang skins. We have a topotype of *M. a. olivaceum* from Malacca, but it is a native skin so old and deteriorated that no reliable comparison can be made with it. None of the specimens are quite so bright as those obtained by Mr. Kloss on the coasts and islands of SE. Siam and listed by me in the Ibis for 1915.

Gyldenstolpe (*loc. cit.*) is in error in stating that these specimens were referred to *T. a. olivaceum*, though a reference is given to Hartert's discussion of the question under that heading.

Pending the collection of a large series from toponymical localities I have not placed these birds under any subspecific name. I have little doubt however that if *M. a. olivaceum* is shown to have any real existence, which for the present must remain an open question, we shall have to call in the aid of a quadrimomial or even quinquenomial system, as is already used in some cases by Hartert, Stresemann and Parrott. If this comes into use at all extensively it becomes an open question whether a return to a bald binomial system is not, after all, the simplest and most convenient plan.

90. MIXORNIS RUBRICAPILLA RUBRICAPILLA, *or subspecies nov.*

Mixornis gularis, Sharpe, *tom. cit.* p. 576; *Robinson and Kloss*, p. 62: *Robinson antea*, vol. v, p. 106 (1915); *Gyldenstolpe*, p. 60.

Mixornis gularis rubricapillus, *Robinson antea*, vol. v, p. 149 (1915).

Mixornis gularis rubricapilla, *Robinson, Ibis*, 1915, p. 751.

a. ♀. Burau, N.W. Langkawi, 14th December 1916. No. 3643.

b-g. 3 ♂ 3 ♀. Telok Wau, Terutau, 18th-26th December. Nos. 3655, 3676, 3703, 3726, 3747-8.

h-i. ♂, ♀ W. side Pulau Telibun, Trang, S.W. Siam. 1st-2nd January 1917. Nos. 3803, 3819.

"Iris whitish, whitish yellow or yellowish white, pale yellow or pale orange, bill bluish slate, black on culmen, feet sage green or yellowish green, orbits bluish slate."

Oberholser's unfortunate discovery that Raffles' *Motacilla gularis* hitherto used for this species in its broad sense is preoccupied and therefore untenable throws the whole of the nomenclature of this and allied forms into the greatest confusion.

In the first place it will be generally admitted that the present form and *Motacilla rubricapilla*, Tickell, Journ. Asiat. Soc. Bengal, p. 576 (1833) from eastern Bengal are only sub-specifically distinct. As a group name Tickell's will therefore take precedence of *Prinia pileata*, Blyth, Journ. Asiat. Soc. Bengal, xi. p. 204 (1842) from Malacca, which Oberholser substitutes for *gularis*.

In 1850 Bonaparte (*Conspectus Av.* i, p. 217), misled by Horsfield's bad figure of *Timalia gularis* Zool. Res. Java, (1824) and assuming that the bird came from Java, which was not the case, renamed the Sumatran bird as *M. sumatrana* with the brief but sufficient diagnosis "Minor subtus cum gula flavissima."

Himalayan birds are also described under the names *Iora chloris*, Blyth, Journ. Asiatic. Soc. Bengal, xi, p. 794 (1842) and *Mixornis ruficeps*, Hodgson, P.Z.S. 1845, p. 23, these names being pure synonyms of each other.

In 1900 Col Rippon described* (*Bull. Brit. Orn. Club.* xi, p. 11), under the name *Stachyridopsis sulphurea* from Namchet, S. Shan States, what is only a form of this species, and finally Gyldenstolpe describes yet another race from North Siam as *Mixornis gularis minor*.

These last two forms (I have examined Rippon's type) are probably pure synonyms of each other, the race being distinguished, apart from its somewhat small size, by the clear yellow underparts, the reduction of the shaft stripes on the throat to mere hair lines and by great diminution of the chestnut tinge on the cap, mantle and external aspect of the wings. The form, spread over the greater part of Tenasserim, the southern parts of Siam and the northern third of the Peninsula is fairly uniform in character and in the absence of direct comparison with topotypes of Tickell's *M. rubricapilla*, cannot be separated from that form. It has had, at present no subspecific name assigned to it. In the central section of the Malay Peninsula it grades into the next form, *M. r. pileata*, which is characterised by the somewhat richer coloured under-surface, less tinged with glaucous green and by its slightly smaller size. The shaft stripes on the throat are broader and the chestnut cap more sharply defined. This form extends from Central Perak down the Peninsula and is also found on the Rhio Archipelago. We possess topotypes from Malacca.

Finally the Sumatran bird is just separable by still richer colouring, shaft stripe very strongly marked and extending on to the flanks. Loes and superciliary feathers dark. This is *Mixornis rubricapilla sumatrana*, Bp.

* *Smithsonian Misc. coll.* Vol. 60, p. 9 (1912).

The races are therefore :—

Mixornis rubricapilla rubricapilla (Tick.). Eastern Bengal, Tenasserim. Southern Siam and Indo-china and North Malay Peninsula.

Mixornis rubricapilla chloris (Blyth), Sub-Himalaia tracts, Nepal to Horem, North Shan States.

Mixornis rubricapilla sulphurea (Rippon). Southern Shan States and N and N.E. Siam.

Mixornis rubricapilla pileata (Blyth). Southern half Malay Peninsula and Rhio Archipelago.

Mixornis rubricapilla sumatrana Bp. Sumatra.

*Mixornis rubricapilla zaptera** Oberholzer. Tana Masa, Batu Islands, W. Sumatra.

Mixornis rubricapilla zarhabdota,* Oberholzer. Pulau Bangkaru, Banyak Islands, W. Sumatra.

91. MYIOPHONEUS EUGENEI CRASSIROSTRIS, Robinson.

Myiophoneus crassirostris, Robinson, *Bull. Brit. Orn. Club*, xxv, p. 98; (1910); Robinson and Kloss, *Ibis*, 1911, p. 62.

a-e. 2♂ ad., 1♀ ad. 1♂ imm. 1♀ imm. Telok Wau, Terutau, 17-25th December, 1916. [Nos. 3650, 3679, 3696, 3724, 3735.]

f. ♀. imm. Koh Muk (Pulau Muntia), Trang, S.W. Siam. 4th January, 1917. No. 3837.

g-h. 2♂ ad. Pasir Raja (Pulau Lontar), S.W. Siam. 10-11th January, 1917. Nos. 3874, 3886.

"Iris dark, bill yellow, black on culmen, feet black."

Fairly common in heavy jungle on the hills, generally in gullies and watercourses.

There is great variation in the very considerable number of adult specimens of this form now in the collection from the mainland of Trang and Perlis and from Langkawi and Terutau. All adults have the pale white spots on the wing coverts present though in a varying degree, these being hardly discernible in one bird from P. Lontar. They are also present in most immature birds which entirely lack the glistening tips to the feathers above and are dull black beneath.

There is considerable sexual variation in size, males being much the larger. It is evident that the form is intermediate between *M. temmincki*, which has a very wide range in continental India, ranging south to Aracan and Burmah and *M. eugenii*, which does not seem to be known West of the Salwin.

If the locality of the specimen of *M. crassirostris* mentioned by Gyldenstolpe, p. 62, viz., Java, is correct, I think that the identification will have to be revised as the specimens would almost certainly be referable to *M. flavirostris*, of which a closely related form, *M. dicrorhynchus*, Salvad. is met with in the south of the Malay Peninsula and in Sumatra.

* *Smithsonian Misc. Coll.* Vol. 60, p. 9 (1912).

92. *HERPORNIS ZANTHOLEUCA XANTHOLEUCA* (Hodgs.).

Herpornis zantholeuca, *Sharpe, tom. cit.* p. 636; *Robinson and Kloss*, p. 63; *Robinson, antea*, vol. v, p. 107 (1915); *Gyldenstolpe*, p. 62.

a-b. 2♀. Burau, NW. Langkawi, 14th December, 1916. No. 3638.

"Iris reddish, bill pale horn, darker on culmen, yellowish at base, feet pale pinkish flesh."

Fairly common at this one locality on Langkawi in open ground near the sea. Widely distributed throughout the Peninsula and very constant in characters, rather more abundant in the north.

93. *GEOCICHLA CITRINA CITRINA* (Lath.).

Geocichla citrina, *Hume, Stray. Feath.* vi, p. 250 (1878) *Seebohm. Cat. Birds, Brit. Mus.* v, p. 176 (1881); *Robinson and Kloss*, p. 63; *Gyldenstolpe*, p. 46.

a. ♂. Pulau Dayang Bunting, Langkawi, 9th December 1916. [No. 3617.]

b. ♀. Pasir Raja, Pulau Lontar, S.W. Siam. 12th January 1917. [No. 3895.]

"Male. Iris dark, bill dark greenish black, feet pinkish flesh tinged with yellow. Female. Iris hazel, bill upper mandible dark horn, lower bluish horn, feet yellowish pink horn."

Besides the above series we have twelve specimens of both sexes shot in various localities in Trang and on Terutau and Langkawi from November to March and a fine adult male from Menuang Gasing, 3-4,000', Ulu Langat, Selangor, February 7th 1912.

There has been much discussion and difference of opinion on the point as to whether *Geocichla innotata*, Blyth, *Journ. Asiat. Soc. Bengal*, xv, p. 370 (1846), described vaguely as from "Malacca" has any claims to even subspecific rank.

The "species" is supposed to differ in richer colour above and in the total absence of white markings on the wing coverts. As regards the tint there is very large variation, both sexual and individual, in specimens with markings on the wings (*G. citrina*) and this character can therefore be disregarded. The white tips to the wing coverts are very variable and specimens lacking or nearly lacking them occur together with those in which they are highly developed. It may further be noted that with the exception of the above-mentioned specimen from the mountains of Selangor, which has strongly marked white patches on the wings, no exactly localised specimens of any *Geocichla* of this type has ever been obtained in the Malay Peninsula south of Penang.

Specimens vaguely labelled "Malacca" or of Malacca "make" may have come from almost anywhere especially since until recent years bird skins were a large export from the territory and the collection thereof a trade which afforded occupation to considerable numbers of hunters who travelled far in pursuit of it.

The specimens collected by Mr. Kloss on the coasts and islands of S.E. Siam, *Ibis* 1915, p. 752 were certainly all *G. innotata*, in that they lacked the wing spots, but his series was small. Possibly Blyth's original locality was incorrect and the real locality of his types was Siam or Indo-China. I am inclined to think that the species is, at anyrate partially, migratory, which would account for its sporadic appearance in the more southern parts of the Malay Peninsula and for its greater abundance in the north of the Peninsula during the winter months.

94. *TURDUS OBSCURUS* (Gm.).

Robinson and Kloss, p. 64; *Robinson, Ibis*, 1915, p. 753; *Gyldenstolpe*, p. 47. *Hartert, Vög. Pal. Faun.* i, p. 656 (1910).

a-d. 2 ♂, 2 ♀. Telok Wau, Terutau. 19th-28th December 1916. [Nos. 3663, 3746, 3758, 3775].

e. 1 ♂. Pasir Raja, Pulau Lontar, S.W. Siam. 12th January 1917. [No. 3897].

"Iris hazel, bill yellowish horn, tip and culmen dark ashy, feet yellowish horn."

Common in Trang and on the islands during the winter months; in the south of the Peninsula found, as a rule, only on the tops of the mountains, presumably on passage.

95. *MONTICOLA SOLITARIUS PANDOO* (Sykes).

Petrocincla pandoo, *Sykes, P.Z.S.* 1832, p. 87.

Petrophila solitaria, *Robinson and Kloss*, p. 64.

Monticola cyanea, Linn; *Gyldenstolpe*, p. 47.

Monticola solitarius pandoo, *Hartert, Vög. Pal. Faun.* i, p. 675 (1910).

a. ♀. Pulau Pandan, nr. Langkawi, 15th March, 1909. [F.M.S. Mus. 406/09.]

b. ♀. Gantang, Trang, S.W. Siam. 12th December, 1909.

c. ♂. Lem Pia, N. Telibun Straits, Trang, S.W. Siam. Jan. 3rd 1917. [No. 3825.]

d. ♂. W side Pulau Telibun, Trang, S.W. Siam. 1st January, 1917. [No. 3801.]

e-f. ♂. Batu Caves, nr. Kuala Lumpur, Selangor. 3rd August, 1908 and 24th January, 1912.

g. ♀. Batu Caves, nr. Kuala Lumpur, Selangor.
24th May, 1910.

"Iris hazel, bill and feet slaty black, gape yellow."

These specimens have the wing 113-124 mm. in the males, and 112-118 in the two measurable females and have no chestnut whatever in the plumage. The bird from P. Telibun is of a somewhat lighter blue and has traces of the black and white terminal tips to the feathers being the remains of the immature pelage. The series must apparently be referred to Sykes' subspecies originally described from the Western Ghats, India.

96. *MONTICOLA SOLITARIUS PHILIPPENSIS* (P.L.S. Mull.).

Hartert, *Vög. Pal. Faun.* i. p. 675 (1910); *Robinson, Ibis*, 1915, p. 752; *Gyldenstolpe* p. 48.

a. ♂. vix ad. West Side, Pulau Telibun, Trang,
S.W. Siam. Jan. 1st 1917. [No. 3807.]

This specimen has the remains of the immature pelage strongly in evidence; the undertail coverts are however mainly chestnut as are also a few of the under wing coverts and feathers of the belly. The wing is 118. The chestnut is very much less developed than in a specimen from Lem Ngop, S.E. Siam, collected by Mr. Kloss on January 15th 1915, but it is, I think best, placed with this form, though it must be admitted that the identification of two birds, shot within a few yards of each other on the same day (see above) as different subspecies is not very convincing, even on the assumption that the entirely blue bird is a winter visitor from the NW. while the chestnut form comes from the NE. The north of the Malay Peninsula is however indubitably the meeting place of easterly and westerly migration streams.

97. *LARVIVORA CYANEA* (Pall.).

Robinson and Kloss, p. 64, *Robinson, antea*, V, p. 149 (1914); *Gyldenstolpe*, p. 49.

a. ♀. Telok Wau, Terutau, 19th December, 1916.
[No. 3670.]

b. ♀. Pasir Raja, Pulau Lontar, SW. Siam, 11th
January, 1917. [No. 3889.]

"Iris hazel, upper mandible black, lower flesh at base, feet pale, whitish flesh."

As has already been noted by *Gyldenstolpe* and myself this species is not improbably resident throughout the year in the north of the Peninsula, specimens having been obtained as late as May 15th. In the south of the Peninsula it certainly only occurs during the winter months.

98. *KITTOCINCLA MACRURUS MACRURUS*, (Gm.)

Cittocincla macrura, *Robinson and Kloss*, p. 65;
Robinson, antea, V, pp. 108, 150.

Sept., 1917.

Kittacincla macrurus macrurus, Hartert, Nov. Zool. ix, p. 572 (1902); *Robinson, Ibis* 1915, p. 753.

Kittacincla macrurus tricolor (part.) *Gyldenstolpe*, p. 50.

a-b. 2 ♂ ad. Pulau Dayang Bunting, Langkawi, 8-9th December 1916. [Nos. 3608, 3615.]

c-h. 5 ♂, 1 ♀. Telok Wau, Terutau, 19th-28th December 1916. [Nos. 3665-6, 3686, 3695, 3757, 3782.]

i-j. 2 ♀ ad. W. side Pulau Telibun, Trang, S.W. Siam. 2nd-3rd January 1917. [Nos. 3812, 3823.]

k. 1 ♂ ad. Koh Muk, Pulau Muntia, Trang, S.W. Siam. 5th January 1917. [No. 3853.]

"Iris hazel, bill black, feet fleshy white."

Hartert (*loc. cit.*) has dealt exhaustively with the races of the Shama but it is still somewhat uncertain in what districts the Indian race, *K. m. tricolor* (Vieill.) meets the Malayan and Indo-Chinese *K. m. macrurus* (Gm.).

The F.M.S. Museums possess large series of Shammas from the central and southern parts of the peninsula but the vast majority of the specimens are either fully adult males or immature birds and we are unaccountably deficient in adult females. The adult males vary greatly in the depth of chestnut tint on the undersurface and it is admittedly impossible to separate Indian and Indo-Malayan birds when this sex only is examined, but the female of *K. m. tricolor* is stated to be very much paler than that of *K. m. macrurus*. The three females in the list detailed above are decidedly paler than two adults from Selangor and it is possible that the birds from North Malay Peninsula and South Siam are intermediate. Among adults differences occur in the colour of the thighs, some having these parts white, with black bases to the feathers and others having them very strongly washed with chestnut but the differences are not apparently associated with locality.

Shamas (*murai batu* of the Malays) are very common on most islands off the coast, especially where these are high and rocky but are very much scarcer on the mainland or in flat country.

99. ORTHOTOMUS ATRIGULARIS (Temm.)

Sharpe, tom. cit. p. 220; *Robinson and Kloss*, p. 66; *Robinson antea*, vol. V, pp. 108, 150 (1915).

a. ♀ imm. Pulau Dayang Bunting, Langkawi. 30th November 1907.

b. ♂ ad. Pulau Langkawi, 18th February 1909.

c-d. ♂ ad, ♀ imm. Telok Wau, Terutau, 29th December 1916. [Nos. 3795, 6.]

Distributed throughout the Peninsula but especially common on the islands.

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100. PHYLLOSCOPUS SUPERCILIOSA SUPERCILIOSA (Gm.).

Hartert, Vög. Palaarkt. Band. 1, p. 518 (1909);
Robinson, Ibis, 1915, p. 755.

Phylloscopus superciliosus (Gm.) *Seebohm, Cat. Birds Brit. Mus.* v, p. 68 (1881); *Robinson and Kloss*, p. 66.

a-d. 2♂, 2♀. Telok Wau, Terutau, 19-29th
December, 1916. [Nos. 3669, 3722, 3788-9.]

e. ♂. W. side Pulau Telibun, Trang, SW. Siam,
3rd January, 1917. [No. 3832.]

"Iris dark hazel, bill brownish horn, greater part of
lower mandible and gape yellowish, feet dark greyish green or
yellowish brown."

Fairly common in the islands. We found this species
abundant on the mainland of Trang in December, 1910. A
male from Taiping, Perak, shot on January 7th 1910, represents
the southernmost locality from which the species has been
obtained and is the only record for the British portion of the
Peninsula.

101. PHYLLOSCOPUS BOREALIS BOREALIS (Blas).

Phylloscopus borealis, *Seebohm, Cat. Birds Brit. Mus.*
V, p. 40 (1881); *Robinson and Kloss*, p. 65; *Robinson, antea*,
vol. V, p. 150 (part.) (1915).

Phylloscopus borealis borealis, *Hartert, Vög. Palaarkt.*
Faun. I, p. 517 (1909); *Robinson, Ibis*, 1915, p. 754; *id. antea*,
vol. VI, p. 232 (1916).

a. ♂. Burau, N.W. Langkawi, 14th December,
1916. No. 3641.

b-c. 2♀. Telok Wau, Terutau, 17-26th December,
1916. Nos. 3649, 3745.

d. ♂. Pulau Butang, Butang Archipelago, 20th
April, 1911.

"Iris dark, bill wax yellow, dark on culmen, tarsi
greenish yellow, wax yellow darker in front, or yellowish
brown."

These birds have the wing 62, 62, 66, 66 mm., with a small
first primary just reaching or very slightly exceeding the
primary coverts. They agree with a series obtained from
near the summit of Kedah Peak in December, 1916.

102. PHYLLOSCOPUS BOREALIS XANTHODRYAS (Swinh.)

Phylloscopus zanthodryas, *Swinh. P.Z.S.* 1863, p.
296.

Phylloscopus borealis zanthodryas, *Hartert, loc. cit.*
p. 518.

Phylloscopus borealis, *Robinson, antea*, vol. V, p. 150
(1915).

- a. ♂. Pulau Butang, Butang Archipelago, 21st April, 1911.
- b. ♂. S.W. Koh Pennan, Bandon Bight, S.W. Siam. 30th May, 1913.

These specimens agree with the descriptions of this subspecies in that they are considerably larger than the typical form (wing 72 mm.), are lighter and more yellowish beneath and possibly more greenish above, though specimens in differing states of plumage vary so much that it is difficult to determine this point.

The Koh Pennan specimen has a large first primary extending about 3 mm. beyond the primary coverts but that from P. Butang can be matched in this by others from Kedah Peak and the south of the Peninsula. Another bird from P. Butang shot on 20th April 1911, has the wing 60 mm. Specimens from S.W. Sarawak shot in November are rather bright but have the wing 66 mm. and are not this form, which, like so many migrant birds, appears only to reach N. Borneo.

103. *LANIUS TIGRINUS*, Drap.

Hartert, Vög. Palaarkt. Faun. I, p. 442 (1907); *Gyldenstolpe*, p. 39.

- a-b. ♂ imm., ♀ imm. Telok Wau, Terutau. 21st-26th December 1916. [Nos. 3691, 3753.]
- c-e. ♀ ad. Pulau Paya, near Kuala Kedah. 24th-25th April 1915.

"Iris dark, bill pale pinkish horn, dark at tip, feet pale slate."

Common throughout the Peninsula throughout the winter months though specimens in the adult plumage are always in the large minority.

104. *LANIUS CRISTATUS CRISTATUS*, Linn.

Lanius cristatus, *Gadow, Cat. Birds Brit. Mus.* viii, p. 271 (1883); *Robinson and Kloss*, p. 69.

Lanius cristatus cristatus, *Hartert, Vög. Palaarkt. Faun.* I, p. 446 (1907).

Otomela cristata, *Gyldenstolpe*, p. 41.

- a. ♀ ad. Kuah, Langkawi. 23rd April 1915.

A nearly adult female evidently on passage. This form is very common throughout the Malay Peninsula in September and October and in March and April. A few appear to stay throughout the winter. Much the commonest of the allied forms locally.

105. *LANIUS CRISTATUS SUPERCILIOSUS*, Lath.

Hartert, loc. cit. supra, p. 447.

- a. ♂ ad. Pulau Paya, near Kuala Kedah, 23rd April 1915.

A very fine adult bird.

106. *LANIUS CRISTATUS LUCIONENSIS*, Linn.

Lanius lucionensis, *Gadow, tom. cit.* p. 274; *Robinson and Kloss*, p. 69.

Lanius cristatus lucionensis, *Hartert, tom. cit.* p. 447.

a. ♀ ad. Langkawi. 30th March 1909.

107. *GRACULA JAVANA JAVANA* (Osbeck).

Mainatus javanensis, *Sharpe, Cat. Birds Brit. Mus.* xiii, p. 102 (1890).

Eulabes javanensis, *Robinson and Kloss*, p. 67.

Gracula javana javana, *Stresemann, Nov. Zool.* xix, p. 314 (1912).

a. ♂. Pulau Dayang Bunting, Langkawi, 8th December 1916. No. 3610.

b. ♂. Koh Muk (Pulau Muntia) Trang, S.W. Siam. 5th January 1917. No. 3852.

c. ♂. Pasir Raja, Pulau Lontar, S.W. Siam. 10th January 1917. No. 3878.

"Iris hazel, lappets rich chrome, anterior greenish at base, bill orange, yellow at tip, tarsi rich chrome."

The specimen from Pulau Lontar shows an approach to *G. j. intermedia* in its smaller size, wing 167 against 182 in the Dayang Bunting bird, but the postocular space is entirely separated from the lappets by a patch of feathers, while the bill is not nearly so small as in true *intermedia*. It is possible that the Hainan and Eastern Siamese birds should after all be separated also, as *Gracula javana hainanus* (Swinh.), as Hartert seems inclined to do (*Nov. Zool.* xvii, p. 251 (1910)). In these the general size is strikingly smaller, especially in the bill, and the lappets are also apparently considerably diminished.

This Mynah was very common on all the islands, especially on Terutau.

108. *APLONIS PANAYENSIS STRIGATUS* (Horsf.).

Calornis chalybea (Horsf.); *Sharpe, tom. cit.* p. 143; *Robinson and Kloss*, p. 68; *Robinson, antea* vol. v, p. 151.

Aplonis panayensis strigatus >affinis, *Stresemann, Nov. Zool.* xx, p. 376 (1913).

a. ♀. Lem Pia, N. Side Telibun Straits, Trang, SW. Siam. 3rd January, 1917. No. 3834.

"Iris carmine, bill and feet black."

It is unfortunate that the name *strigatus* applied to the immature bird by Horsfield, but which is printed earlier in the same page should have to replace the more familiar *chalybea*.

Stresemann is probably correct in regarding all the forms of the genus occurring in the Oriental region as merely of subspecific value and basing them on the first described, viz.

Muscicapa panayensis, Scop. Del. Flor et Faun. Insubr. ii, p. 96, (1783) from the Philippines.

He is also correct in stating that there is a gradual transition from *A. p. strigatus* to *A. s. affinis* from Tipperah and Cachar, which is a larger bird with a more reddish violet sheen on the lower surface. It should be mentioned however that Hume (*Stray Feath.* vi, p. 394) absolutely denies that these differences exist.

The species is evidently extremely plastic and varies greatly in many of the small islands in the Malaysian area principally in size, in the development of the bill and in the degree and tinge of the metallic sheen on the plumage, some forms being almost dull black.

109. *ANTHUS RICHARDI MALAYENSIS* (Eyton.)

Anthus malayensis, Eyton *P. Z. S.* 1839, p. 104.

Anthus richardi malayensis, Stresemann, *Nov. Zool.* xix, p. 316 (1912).

Anthus malayensis, Robinson and Kloss. *Ibis*, 1911, p. 74; Robinson J., *F.M.S. Mus.* V, p. 151 (1914).

Anthus rufulus (part.) Sharpe, *Cat. Birds Brit. Mus.*, x, p. 574.

Corydalla malayensis, Hume, *S. F.* viii, p. 65 (1879).

a. ♀. ad Pulau Langkawi. 17th February, 1909.

b. ♀. ad Pulau Langkawi. 27th September, 1915.

Wings 82, 77; Tarsi 29, 27.

This is a resident bird in the Malay Peninsula, whence no reliably identified examples of other races have been recorded. Stresemann's method of treating *rufulus* as a race of *richardi* and *malayensis* as its Malayan representative seems the most satisfactory way of regarding this bird.

110. *DICRURUS ANNECTANS* (Hodgs.)

Sharpe, *tom. cit.* p. 231; Robinson and Kloss, p. 72; Robinson, *Ibis*, 1915, p. 761.

a. ♀. imm. Telok Wau, Terutau. 20th December 1916. [No. 3680.]

b-c. 2 ♂ ad. W. side Pulau Telibun, Trang, S.W. Siam. 1-2nd January 1917. [Nos. 3806, 3810.]

"Iris carmine, bill and feet black."

This species is certainly merely a winter visitor to the Malay Peninsula and Straits of Malacca and no specimen has been obtained between the months of April and September. Immature birds indicated by the large amount of white in the plumage are always in the great majority. Little is known definitely of its distribution in the Indian Empire but it appears probable that it is a breeding bird in Upper Assam and the lower Himalayan foothills, west to Nepal.

III. DISSEMURUS PARADISEUS PARADISEUS (Linn.).

Dissemurus paradiseus, Sharpe, *tom. cit.* p. 225; *Robinson and Kloss*, p. 71; *Robinson antea*, vol. v., pp. 109, 150; *Hartert. Nov. Zool.* ix, pp. 579, 580.

Dissemurus paradiseus paradiseus, Robinson, *Ibis*, 1915, p. 760.

a-d. 2♂, 2♀. Telok Wau, Terutau. 19-24th December 1916. [Nos. 3661, 3688, 3712, 3727.]

e-f. 3♀. Pasir Raja, Pulau Lontar, S.W. Siam. 9-12th January 1917. [Nos. 3870, 3894.]

"Iris carmine, bill and feet black."

Common on all the islands and on the adjacent coast.

Regarded as a species in the old-fashioned sense, this King Crow, ranging as it does over the whole oriental region, probably exhibits greater variation than almost any other species within the area.

While it is indubitably true that too many nominal species have been founded on material deficient both in numbers and in range, the converse is undoubtedly true and at the present time it is not possible to maintain that only one species can be maintained. Without going into the whole question, which the material at my disposal does not admit of, it may be stated that so far as material from Java, Borneo, Sumatra and nearly the whole length of the Peninsula shows, we can recognize the following forms.

1. A form with a fairly full, compressed and recurved crest with large rackets and a wing of more than 150 mm. = *Dissemurus paradiseus paradiseus* (Linn.).

Tenasserim, Northern two-thirds of the Malay Peninsula, Southern Siam, Sumatra and Java. *D. rangoonensis*, Gould, is probably synonymous.

2. A form with the crest less developed, slightly shorter wing and smaller rackets = *Dissemurus paradiseus platurus* (Vieill.)

Inhabits the extreme south of the Peninsula, the Rhio Archipelago, Java and Sumatra and is connected with the foregoing by intermediate specimens in the central third of the Peninsula.

3. A still smaller form, wing about 140 mm., tail rackets still more reduced and with practically no crest = *Dissemurus paradiseus brachyphorus*, Bp. Inhabits Borneo.

II2. ORIOLUS MELANOCEPHALUS, Linn.

Robinson and Kloss, p. 72; *Gyldenstolpe*, p. 23.

a. ♂ ad. Lem Pia, N. side Telibun Straits, Trang, S.W. Siam, 3rd January 1917. [No. 3833.]

"Iris red, bill pink, feet greenish grey."

Also occurs in Langkawi, this being its southernmost recorded locality.

113. *ORIOLOUS INDICUS*, Jerd.

Robinson and Kloss, p. 72; *Robinson, Ibis*, 1915, p. 758; *Gyldenstolpe* p. 22.

a.-b. ♀ ad., ♀ vix ad. Telok Wau, Terutau, 21-23rd December 1916. [Nos. 3693, 3711.]

c-e. ♂ ad., 2 ♀ imm. Koh Muk (Pulau Muntia) Trang, S.W. Siam, 4-6th January, 1917. [Nos. 3845, 3860-1.]

f. ♂ ad. Pasir Raja, Pulau Lontar, S.W. Siam. 12th January, 1917. [No. 3891.]

"Iris red, bill pinkish horn, feet slate."

Very common in the winter months all over the north of the Peninsula; scarcer in the south. None of the specimens show any approach to the allied *O. tenuirostris*, which differs in the much narrower black nuchal band and the broader yellow tips to the tail feathers. It has been recorded from the extreme south of Tenasserim but never from within Peninsular limits.

114. *CORVUS MACRORHYNCHUS*, Wagl.

Robinson and Kloss, p. 71; *Robinson, antea*, vol. V, p. 150; *Robinson, Ibis* 1915, p. 761; *Gyldenstolpe*, p. 16.

a. ♂ Burau, NW. Langkawi, 14th December, 1916. [No. 3634.]

b. ♂ W. side Pulau Telibun, Trang, S.W. Siam, 3rd January 1917. [No. 3831.]

"Iris grey or hazel, bill and feet black."

Common at the fishing stations along the coast as elsewhere in the Malay Peninsula where this bird rarely occurs in the inland districts, where its place is taken by the totally different *C. compilator*, Richmond, *C. enca*, Horsf.

These specimens, which are in freshly moulted plumage, have the throat and back well developed and except on the head and neck are glossed with purplish and green, the former predominant. The bases of the feathers are dull grey but in two others from Langkawi and Terutau these are much paler, while a male from Trang has them nearly white. The whole series from the Malay Peninsula is somewhat variable in this respect as also in size, and in view of the fact that Stresemann's recent monograph on the group (*Verh. Ornith. Ges. Bayern*, xii, pp. 377-404 (1916) is not accessible to me I do not propose to attach any subspecific name to these birds. Wing 335 and 338 mm.

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115. *DICAENUM CRUENTATA IGNITA* (Begbie).

Dicaeum cruentatum, *Sharpe*, *tom. cit.* p. 15; *Robinson and Kloss*, p. 78.

a. ♀. Telok Wau, Terutau, 23rd-29th December 1916. [Nos. 3714-7, 3737, 3772, 3790].

"Iris dark hazel, bill and feet black, basal half of bill slaty."

In view of Gyldenstolpe's identification of specimens from Koh Lak, Siamese Malaya, with the reputed Chinese and Hainan form, *D. c. coccinea*, (Scop.), I have again gone through very carefully the very large series of this species in the F.M.S. Museums, in the light of Hartert's remarks on the subject, *Nov. Zool.* xvii, p. 243 (1910).

Begbie's specimens came from somewhere near Kessang in the territory of Malacca, and it is therefore hardly legitimate to regard specimens from Terutau, 400 miles to the north, as strictly representative of his *Nectarinia ignita*. Our specimens are by no means uniform and while the majority have the outer aspect of the wing glossy purplish one or two have the lesser wing coverts and scapulars with a distinct oily green gloss without purplish. Specimens from Trang are the same but those from Koh Pennan and Koh Samui have but little purple tinge and must therefore be regarded as *D. c. coccinea* if we are to recognise that form. In addition these specimens have the red parts of the plumage more vermilion and less scarlet, but this may be due either to age of the bird or of the feathers. The females are certainly not more rusty orange above as Hartert says is the case with Hainan specimens. Hartert has not defined the limits of his three forms, at least so far as the typical *D. c. cruentata* is concerned and it would appear that they all converge somewhere in the region of Southern and Western Siam.

116. *DICAENUM TRIGONOSTIGMA* (Scop.).

Sharpe, *tom. cit.* p. 38; *Robinson and Kloss*, p. 78; *Robinson, antea*, vol. v, p. 110 (1915).

a-f. 4 ♂, 2 ♀. Telok Wau, Terutau. 17th-23rd December. Nos. 3647-8, 3684-5, 3718-9.

"Iris dark, bill plumbeous green, feet slate."

Common nearly everywhere in the Peninsula.

117. *DICAENUM CHRYSORRHOEUM*, Temm.

Sharpe, *Cat. Birds Brit. Mus.* x, p. 44 (1885); *Robinson and Kloss*, p. 78; *Robinson, Ibis*, 1915, p. 756; *Gyldenstolpe*, p. 36.

a, b. 2 ♂. Telok Wau, Terutau. 21st-28th December 1916. Nos. 3707, 3776.

Rather rare in the north of the Peninsula; we have only one specimen from Trang.

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118. CYRTOSTOMUS FLAMMAXILLARIS (Blyth).

Cinnyris flammaxillaris, *Gadow, tom. cit.* p. 83.

Cyrtostomus flammaxillaris, *Robinson and Kloss*, p. 74; *Robinson, antea* vol. v, p. 151 (1915); *Gyldenstolpe*, p. 33.

a. ♂. Telok Wau, Terutau. 27th December 1916. [No. 3766].

Common in Trang, on Terutau and Langkawi and also on the Butang Archipelago further west, extending as far south as Penang Island. In the Malay Peninsula is a littoral and open country species not found in heavy forest.

119. LEPTOCOMA BRASILIANA (Gm.).

Certhia brasiliana, *Gm. Syst. Nat.* I., p. 474 (1788); *Oberholser, Smithsonian Misc. Coll.* 60, p. 18 (note) (1912).

Leptocoma hasselti, *Robinson and Kloss*, p. 77; *Robinson, Ibis*, 1915, p. 757. *Robinson, antea*, vol. V, p. 152.

a. ♂. Burau, NW. Langkawi. 14th December 1916. No. 3635.

"Iris, bill and feet black."

Abundant along both coasts of the Peninsula, from Singapore to the extreme north, but never, so far as my experience goes, at any distance from the sea. Possibly because, like many of the family, this species likes sunny, open spaces and flowering shrubs.

AETHOPYGA SIPARAJA CARA, Hume.

Aethopyga cara, *Hume, Stray Feath.* ii., p. 473 (1874); *Robinson, antea*, vol. v, p. 151 (1915).

Aethopyga siparaja, *Robinson and Kloss*, p. 74.

Aethopyga siparaja cara, *Robinson, Ibis*, 1915, p. 757.

a. ♂. Burau, N.W. Langkawi. 12th December 1916. [No. 3622.]

b-d. 2 ♂, ♀. Telok Wau, Terutau, 26th-29th December 1916. [Nos. 3743-4, 3791.]

"Iris dark, upper mandible black, lower yellowish brown, feet dark brown."

Rare on Langkawi, fairly common on Terutau among the mangroves and on bushes in open country bordering heavy jungle.

Comparison with topotypical specimens of the true *Ae. siparaja* (Raffles) from West Sumatra, confirms the differences already noted between these forms and in addition it would appear that in *Ae. s. cara* the metallic feathers of the crown extend further back, almost to the level of the ear-coverts.

120. ANTHOTHREPTES MALACCENSIS (Scop.)

Robinson and Kloss, p. 76; *Robinson, antea*, vol. V, p. 152; *Robinson, Ibis*, 1915, p. 757; *Gyldenstolpe*, p. 34.

a-i. 4 ♂ ad 1 ♂ imm. 4 ♀. Telok Wau, Terutau.
21-28th December 1916. [Nos. 3708, 3754,
3762-3, 3767-9, 3683.]

j-k. 1 ♂ ad., 1 ♂ imm. West Side, Pulau Telibun,
Trang, S.W. Siam. 1st January, [Nos.
3798-9.]

"Iris chestnut, bill black, feet dull yellowish green."

Common, as elsewhere, wherever there were coconut palms.

121. CHALCOSTETHA CALCOSTETHA (Jard.)

Chalcostetha insignis (Jard.); *Gadow, Cat. Birds Brit. Mus.* ix, p. 12 (1884).

a-d. 4 ♂. Telok Wau, Terutau. 27th-28th
December 1916. [Nos. 3764-5, 3780, 3793].

This gorgeous sunbird is almost entirely confined to the mangrove zone where in certain localities it is very common. We have it from Penang; Pulau Pintu Gedong, Selangor Coast; Pulau Tinggi and Pulau Sri Buat, East Coast, Malay Peninsula.

For the inconvenient change of name from the more familiar *Ch. insignis* cf. *Oberholser, Smithsonian Misc. Coll.* 60, p. 17 (1912).

112. CHALCOPARIA SINGALENSIS (Gm.).

Motacilla singalensis Gm. *Syst. Nat.* I. pt. 2, p. 964 (1879); *Oberholser, Smithsonian Misc. Coll.* 60, p. 21 (1912).

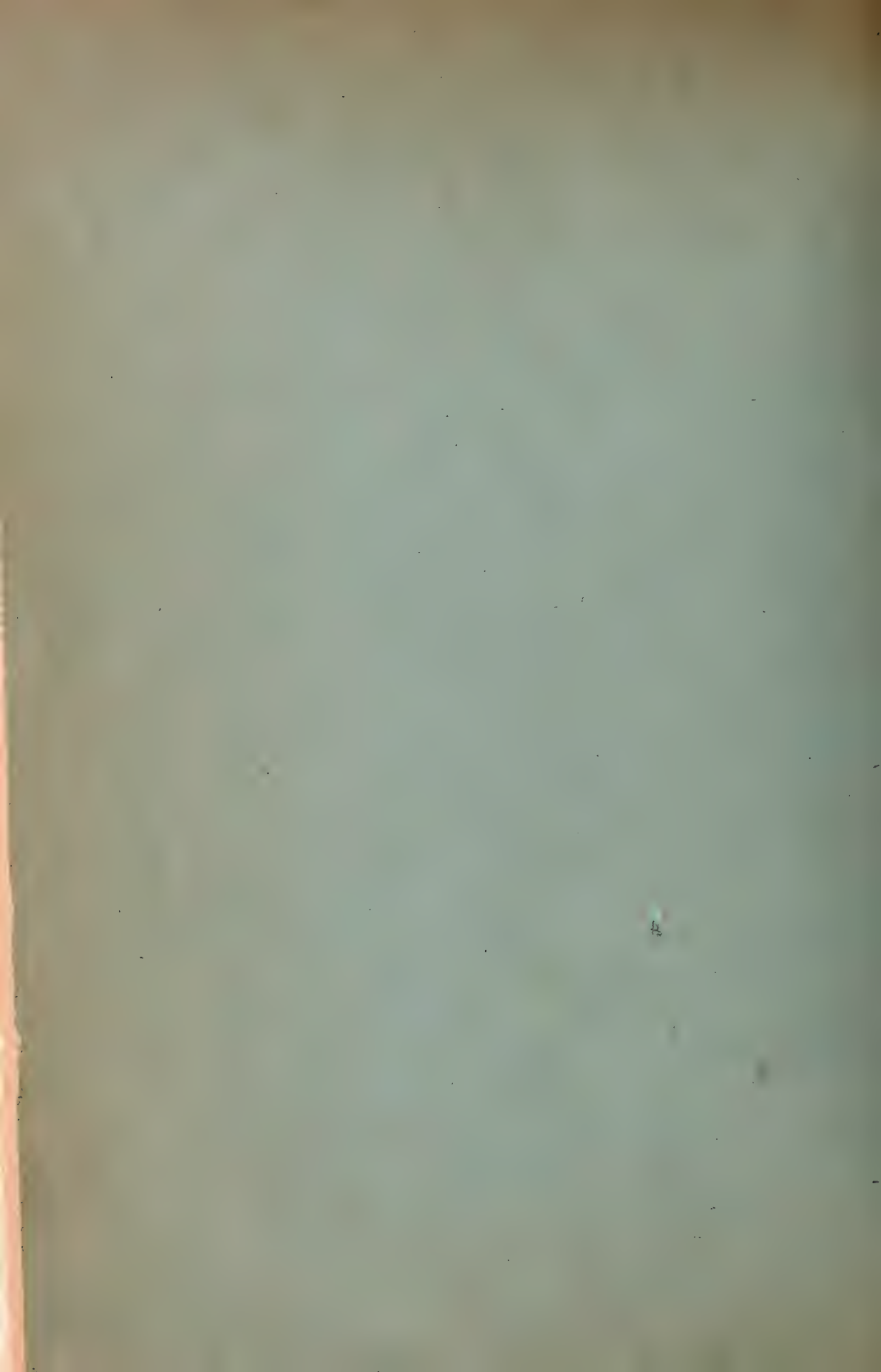
Chalcoparia phoenicotis (Temm.) *antea*, vol. v, p. 106; *Gyldenstolpe*, p. 34.

a. ♂. Telok Wau, Terutau. 29th December 1916. [No. 3792].

Oberholser (loc. cit.) has pointed out that though the locality is erroneous Gmelin's *Motacilla singalensis* is the first name for this species and must be used and he has designated Malacca as the type locality.

C. phoenicotis (Temm.) *Pl. Col.* 108, fig. 1; 388, fig. 2 (1824), type from Java, is available as a name for the Indo-Malayan bird from Java, Borneo and Sumatra if separable, which on comparison of birds from Selangor with one from the West Sumatran coast appears not to be the case.

The Continental bird, except that from "Malacca" is at present without a name, but the adult bird from Terutau above listed and a female from Bandon appear to differ from Southern Malayan specimens in having the yellow of the lower surface decidedly brighter and less green and the rufous of the throat and upper breast somewhat lighter and not carried so far down. Wing about 53 mm. in the specimens above mentioned.



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1918.

XXVI. FOUR NEW BIRDS FROM JAVA.

By H. C. ROBINSON, C.M.Z.S.

DENDROBIASTES HYPERYTHRA VULCANI, subsp. nov.

Adult male:—Very close to *D. r. malayana*,¹ Ogilvie Grant¹, from the mountains of the Malay Peninsula and from Sumatra but differing in having the throat and breast somewhat paler, more yellowish orange, less rufescent, the fulvous wash on the flanks distinctly lighter and the middle of the abdomen whiter. "Iris dark, bill black, feet slaty purplish."

Adult female:—The upper surface more olivaceous than in the corresponding sex of *D. h. malayana*, the throat and middle of the abdomen whiter and the pectoral band and the flanks light yellowish fulvous brown, not rufescent brown. "Iris dark, bill black, feet light pinkish grey."

Dimensions (taken in the flesh). Male: Total length, 113; wing, 59; tail, 46; tarsus, 18; bill from gape, 15 mm.

Female:—Total length, 113; wing, 59; tail, 47; tarsus, 18; bill from gape, 14 mm.

Types:—Collected at Tjibodas, slopes of the Gedeh Volcano, 4-6,000 feet, Western Java, on 14th and 15th February, 1916. ♂ No. 2413. ♀ No. 2365.

Specimens examined:—Twenty-one, from the slopes of the Gedeh, at altitudes from 4,000 to 8,500 feet.

Six males from the Idjen Volcano, near Banjoewangi, Eastern Java, are perhaps even paler and brighter beneath, while a single female, which we have to associate with the males, differs very markedly in having almost the whole of the under-surface pale buffy yellow, the throat and chin being quite concolorous with the breast. In the absence of further female specimens and of examples from Bali I prefer not to describe it.

POMATORHINUS MONTANUS OTTOLANDERI, subsp. nov.

Adult:—Differing from the typical *P. m. montanus* of the mountains of Central and Western Java in having the white superciliary streak not continued past the eye to the base of the bill as is invariably the case in the western race. General colour of back, mantle and flanks rather more chestnut and less ochraceous rufous than in the western form, though this character is only noticeable when large series of each race are compared.

¹ *Muscicapula malayana*, Ogilvie Grant, Bull. Brit. Orn. Club. XIX., p. 10 (1906).

Measurements of type:—Wing, 94, tail, 105; bill from gape, 26; tarsus, 33 mm. *Type*:—Adult male from Sodong Gerok, Idjen Massif, 3,900 feet, near Banjoewangi, Eastern Java, April 1st, 1916. Very large series examined from the same vicinity from 1,400 feet to 5,000 feet.

Remarks:—Hartert, in a paper on birds from the Ardjuno has already noticed the differences in the superciliary streak (Nov. Zool. iii, p. 539 (1896), while a reference to Horsfield's original description and Plate (Zool. Res. Java (1824) of *P. montanus* show these characters as strongly marked. Horsfield's specimens came from Merbabu in Central and Prahū in West Central Java, while my own material, consisting of over twenty skins, is from the Gedeh in Western Java. Under these circumstances I consider that the eastern form is perfectly entitled to subspecific recognition, though in a considerable number of specimens traces of white are discernible in the loreal region.

STACHYRIS ORIENTALIS, sp. nov.

Separable at a glance from *St. thoracica* (Temm.) from Western Java, (eight specimens examined), in having the whole head and hind neck slaty black, clearly differentiated from the mantle. Rest of the upper surface of a more ochraceous rufescent, less chestnut tinge. Beneath, the white pectoral collar forms a regular gorget and is not encroached upon in the middle of the throat by the black of the chin and neck, as in the western form. White gorget bordered beneath by a black band broadest on the sides of the breast, this band being entirely absent in *St. thoracica*.

Wing, 82; tail, 79; bill from gape, 25; tarsus, 31 mm.

Type:—Adult male from Sodong Jerok, Idjen Massif, 3,900 feet, near Banjoewangi, East Java, on March 28th, 1916.

Thirteen specimens examined.

STACHYRIDOPSIS MELANOTHORAX INTERMEDIA, subsp. nov.

Intermediate between *St. m. melanothorax*¹ (Temm.) from Western Java and *St. m. baliensis* (Hartert)² from Java. Differs from the former in having the middle of the breast sandy buff, uniform with the flanks, not white, and from the latter in having the chin and throat pure white, only very faintly tinged with buff. Outer webs of the primaries, decidedly richer brown than the back but not nearly so bright as the wing coverts.

Adult female (type):—Wing, 60; tail, 60; bill from gape, 19.5; tarsus, 23 mm.

¹ *Myiothra melanothorax*, Temm. Pl. Col. II, pl. 185, fig. 2 (1823).

² *Cyanoderma melanothorax baliensis*, Hartert, Bull. Brit. Orn. Club, XXXVI, p. 2 (1915).

Another female specimen, less adult, wing, 57; tail, 56; bill from gape, 18.5; tarsus 21 mm.

Locality:—Sodong Gerok, Idjen Massif, 3,900 feet, near Banjoewangi, Eastern Java.

I cannot agree with either the late Dr. Sharpe or Dr. Hartert that this bird is correctly placed in the genus *Cyanoderma*, Salvad., of which the type is *Cyanoderma bicolor* (Blyth), from Borneo, which has naked cheeks, whereas the present bird has them feathered.

As Dr. Hartert notes, *St. melanothorax* has been omitted from the Catalogue of Birds (Vol. VII.) but is carefully described by Sharpe in 1884. (*Notes Leyden Mus.* vi., p. 177 (1884).

XXVII. ON TWO NEW SPECIES OF FLOWER
PECKERS (DICAETIDAE) FROM THE
MALAY REGION.

By H. C. ROBINSON, M.B.O.U. AND C. B. KLOSS, M.B.O.U.

PIPRISOMA SORDIDUM, sp. nov.

Differs from *P. modestum* (Hume), of the Malay Peninsula, Tenasserim and Siam in the absence of streaks on the under-surface and of white on the tail, from *P. obsoletus* (Mull. and Schleg.), of Timor and Flores in the latter character and in the duller undersurface, from *P. everetti* (Sharpe), of North Borneo and Labuan in the darker underparts and from *P. olivaceus* (Tweed.), of the Philippines in the duller upper surface.

Type:—Adult male, collected on 14th July, 1913, at Rawang, Central Selangor. F.M.S. No. 101/18.

Above dull brown, the feathers of the head with darker centres, the edges of the primaries, secondaries, upper tail-coverts and tail-feathers edged with olivaceous green, broader and greener on the inner secondaries. Beneath dull fuscous, chin and throat and the centre of the belly, whitish; under tail coverts whitish with greyish centres. Under wing coverts and axillaries, greyish, with dark centres to the former; sides of the face and lores greyish brown, malar region somewhat darker. Tail feathers with no traces of white.

Dimensions (in skin):—Wing, 60; tail, 33; tarsus, 13.5; bill from gape, 11 mm.

Remarks:—This bird is probably only a subspecies of *P. everetti*, Sharpe, Ibis 1877, p. 16; id. P.Z.S. 1879, p. 343, Pl. XXX, fig. 1, from which it differs in its very much darker colour beneath.

DICAETUM VAN HEYSTI, sp. nov.

Nearest to *D. ignipectus* (Hodgs.), of the Himalayan countries and the mountains of the Malay Peninsula but entirely lacking any red in the plumage or any black abdominal patch, which character also separates it from *D. beccarii*, of W. Sumatra.

Type:—Male (vix adult), from Beras tagi, Mountains of NE. Sumatra, collected on 10th June, 1917, by A. D. van Heyst. Collector's No. 517.

Above like *D. ignipectus*, but the metallic colouring with a more greenish cast. Below, throat and upper breast almost pure white, flanks and sides of the breast dusky, slightly tinged

with olive. Abdomen olivescient, under tail coverts buffy with black bases. Axillaries and under wing coverts silky white; sides of the head slaty black.

Wing, 48; tail, 23; tarsus, 13; bill from gape, 10.5 mm.

Female:—Differs from the female of *D. ignipectus* in being more greenish and darker beneath, only the breast and abdomen being slightly washed with ochreous buff. (No. 512).

Specimens examined:—Three, the above mentioned male and female and an immature male, resembling the female, all collected at the same locality and on the same date.

Remarks:—There is little doubt that these specimens represent a species allied to but quite distinct from the continental *D. ignipectus*, the total absence of the black pectoral patch being the most characteristic feature. They cannot apparently be referred to *Dicaeum sollicitans*, Hartert from Java.

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XXXIV. NOTES ON THE VERTEBRATE FAUNA OF THE PAHANG-JOHORE ARCHIPELAGO.

Plates VI—VII.

By H. C. ROBINSON.

I. A LIST OF BIRDS FROM PULAU TINGGI.

Pulau Tinggi is a mountainous island on the East Coast of Johore from which it is separated by about ten miles of sea carrying but little more than ten fathoms. In maximum length it is about seven miles and in breadth about three miles while the central conical peak, which is visible from a great distance, is a little over two thousand feet in height.

On the West and South-west sides there are several small bays which are inhabited by a small mixed Malay-Jakun population which has much decreased of late years, owing to the ravages of small-pox, malaria and cholera. They are very poverty-stricken and subsist on fishing, on the collection of pearl shell (*gewang*) and edible birds nests on the surrounding islets and on the produce of somewhat indifferent coconut plantations.

There are numerous small islets in the immediate vicinity but none of any importance.

There is good anchorage for small craft between an outlying reef and the shore in one or two places on the South and Southwest Coasts but on the North and East the coast is steep-to. In the S. W. monsoon water is scarce and bad.

Some forty or more years ago the island in its higher parts was devastated by a cyclone and much of the jungle blown down. The dominant tree on the hills is now *pulai* (*Alstonia scholaris*) but there is much rattan and a certain amount of bamboo. The littoral vegetation is of the type common to all Malayan islands which are not fringed with mangrove.

Except for the narrow belt of coconut cultivation on the shore and one or two small clearings for vegetables, etc., on the sides of the hills the island is covered with heavy jungle throughout, in contradistinction to Pulau Aor, the most seaward island of the group, which is planted with coconuts practically to the summit (Plate VI, upper figure) and Pulau Sri Buat, which is nearest to the Johore-Pahang Coast (Plate VII, lower figure) which is bare and rocky with patches of coarse wiry grass and thin scrub.

The mammalian fauna is poor and uninteresting, consisting of a kra monkey (*Macaca irus laetus*), two rats, both of which are commensal on man, a squirrel of the *vittatus* type

and two or three bats, though no *Pteropus* has as yet been obtained. The Duyong is occasionally found in one or two of the bays.

Among reptiles *Python*, *Dryophis*, a species of *Dipsadomorphus*, two species of *Draco*, *Calotes cristatellus*, *Mabuia multifasciata*, *Lygosoma olivaceum*, *Lygosoma scotophilum* and two species of *Hemidactylus* have been met with.

Lepidoptera on all our visits were scarce and of no special interest.

The island has been visited by us on several occasions during the last fifteen years for periods varying from a few hours to four or five days and the following species of birds have been collected on it; I have not attempted to emulate Dr. H. C. Oberholser and provide the birds each with a separate subspecific name and indeed can distinguish few if any differences between the specimens from the islands and those from the adjacent mainland.

No list of the birds has hitherto been published.

1. *Osmotreron vernans* (Linn.)

2. *Carpophaga aenea* (Linn.)

3. *Myristicivora bicolor* (Scop.)

All three species extremely common.

4. *Chalcophaps indica* (Linn.)

Fairly numerous on the higher ground.

5. *Caloenas nicobarica* (Linn.)

Not common and hard to obtain.

6. *Sterna bergii pelecanoides*, King.

Common round the island.

7. *Sterna melanauchen melanauchen*, Temm.

Also common and breeding on adjacent rocky islands in June, July and August (Plate VI, lower figure portrays one breeding station between the two islands of the Sri Buat Group.)

8. *Sterna anaetheta anaetheta*, Scop.

Very common, breeding in enormous numbers on many of the adjacent rocks, especially on Tokong Burong, between Sri Buat and Tioman.

9. *Aegialitis alexandrina peroni* (Bp.)

antea, p. 139.

A breeding pair shot on June 21st, 1915.

We have dealt with this species or race at length elsewhere; it is fairly common in the summer months throughout the Johore-Pahang archipelago.

10. *Demiegretta sacra* (Gm.)

Extremely common.

11. *Fregata ariel* (Gould.)

Fairly common; one was obtained in June 1908.

12. *Haliaetus leucogaster* (Gm.)

13. *Haliastur indus intermedius*, Gurney.

Both very common though specimens from this locality have not been preserved.

14. *Halcyon chloris* (Bodd.)

Two adult males were shot on Pulau Tinggi on 18th and 20th June 1915. Wing, 107, 105, exposed culmen, 48, 46 mm.

I am unable to agree with Mr. Oberholser in the conclusions arrived at in his recent "Revision of the subspecies of the White-Collared Kingfisher," *Sauropatis chloris* (Boddaert). (Proc. U. S. Nat. Mus. vol. 55, 1919, pp. 351—395).

I consider that the whole of the Indo-Malayan forms eastwards to the Philippines should be regarded as one species and that division into subspecies is impracticable and not justified by the facts.

Our series of the form listed by Mr. Oberholser under the name *Sauropatis chloris armstrongi*, vastly exceeds that in the United States National Museum and amongst them are to be found all the colour variations assigned to that race, to *S. c. cyanescens*, and to *S. c. palmeri*, from Java.

As regards dimensions it would appear from the quoted measurements that *S. c. cyanescens* is a slightly larger form than *S. c. armstrongi* but on the other hand seven birds from near Deli, N. E. Sumatra, measure 96—102 in wing and on this account would have to be assigned to the latter form, thus doing violence to Dr. Oberholser's geographical distribution. Birds from West Sumatra run up to 113 mm. while we have specimens from the mainland of the Malay Peninsula and from Langkawi which measure 109 and 111 mm.

To anyone familiar with the bird, in life, it is incredible that the communities living on opposite sides of narrow straits should possess any real subspecific distinctness and I cannot therefore admit that birds from N. E. Sumatra are distinct from those from the N. W. Malay Peninsula or that the opposite sides of the Sunda Straits are inhabited by two different forms, *S. c. cyanescens* and *S. c. palmeri*, Oberholser.

15. *Hemiprocne longipennis harterti*, Stresemann.

Nov. Zool. XX, 1913, p. 339; Oberholser, Bull. U. S. Nat. Mus. 98, 1917, p. 28 (Anambas).

One female shot on 20th June, 1915. Wing 158 mm.

16. *Collocalia francica inexpectata*, Hume.

Oberholser, Proc. Aad. Nat. Sci. Philad. 1906, pp. 200, 201.

A Swift, which I refer to this form, was found breeding on Tokong Gantang, a group of rocks S. W. of Pulau Tinggi, on June 21st, 1915, and a single male shot.

The bird has hardly any trace of feathering on the tarsus, is rather dark above, with greenish gloss, the bases of the loreal feathers are pure white and the pale rump band, with dark shafts to the feathers, is clearly defined. The wing is 118 mm.

Four birds, one male and three females, from the adjacent island of Pulau Tioman (birds from which island Oberholser refers to this species) have the wing immeasurable, as they are all in moult, but probably exceeding 110 mm. in all cases; one has no trace of pale rump band, in one it is very clear and in the two others very ill-defined. All are darker than a series of the closely related *C. f. germani*, Oust. (*C. f. merguiensis*, Hartert) from the islands in the Bandon Bight, further North.

There seems to be no reason why the Tokong Gantang bird should not be referred to the near-by *C. fucifaga amechana*, Oberholser, from the Anamba islands, described from two specimens, while the bird from Pulau Tioman, without rump band, would appear to agree with *C. fuciphaga vestita*, as defined by Oberholser, who records a specimen from Tanjong Silantai, East Johore, about fifty miles distant.

Under the circumstances I am in agreement with Ogilvie Grant, who thinks that too many races of this group have been described on insufficient material and am not therefore prepared to admit that more than one race of this Swift exists on the coasts of Johore and Pahang to which I consider the above name applies.

17. *Hypothymis azurea prophata* Oberholser.

Oberholser, Proc. U. S. Nat. Mus. 39, 1911, p. 597.

A single female, shot on June 19th, 1915, agrees with others from the mainland of the Malay Peninsula but has the wing rather long, 71.5 mm.

18. *Pycnonotus plumosus chirolethis*, Oberholser.

Bull. U. S. Nat. Mus. 98, 1917, p. 41 (Anamba Islands).

Two males shot on 17th and 19th June have the wing 91 and 86 mm., measured flat. Oberholser's type series from the Anambas which are stated to differ only in size from the typical birds from Singapore and the Malay Peninsula have the wings recorded as from 83.5 to 90.5 measured across the curve (say 86 to 93 measured flat) while a very large series from all parts of the Malay Peninsula range from 79–87 mm.

The above two specimens have the angle of the wing and the axillaries rather brighter golden buff than in most specimens from the mainland.

The race is therefore just recognizable.

"Iris red, bill black, feet pinkish brown."

19. *Kittacincla malabarica macrurus* (Gm.).

Numerous adult specimens from Pulau Tinggi and the adjacent islands and a very large series from the whole range of the Malay Peninsula and from Siam and Cochin China exhibit variations in colour among birds from the same locality which are comparable in degree with the birds from the Anambas described by Mr. Oberholser on not very large material as *Kittacincla malabarica ochroptila* and *K. m. heterogyna*, loc. cit. supra, pp. 51—4x.

As regards size it would appear that the former race is larger than any of about fifty adults from our series but the average difference is only about 4 mm., which may quite possibly be due to the great difference in the numbers of the two series. I cannot but think that in faunal papers of this kind no good purpose is served by describing subspecies of such extreme tenuity unless the whole species over its whole range is adequately discussed.

We are compelled to use the name *malabarica* disinterred by Dr. Richmond, though fortunately it does not alter the name of the Malayan and eastern race, unless the Pulau Condor bird should prove distinct. In this event it will probably be necessary to give a new subspecific name to the Sumatran and Malayan birds. Hartert has fixed the type locality of *K. tricolor* (Vieill.) as "India"; this name therefore lapses as a synonym of *K. malabarica* (Scop).

20. *Gracula javana javana* (Cuv.)

A male and two females shot in June 1908 and June 1915 have the wings 183, 181, 188 mm. I cannot distinguish them from specimens from the whole of the Malay Peninsula, from Borneo and from Sumatra though unfortunately we have not been able to compare them with the typical form from Java.

21. *Aplonis panayensis strigata* (Horsf.)

An immature male in the striped plumage collected on June 18th, 1919, has a wing of 96 mm. The bill is not specially large, and the specimen has to be referred to the mainland form, which is identical with that of Java and Sumatra. The birds from Pulau Aor, on the other hand, have somewhat larger bills and on an average rather longer wings. Possibly they are to be referred to the Anamba race, *Lamprocorax panayensis heterochlorus*, Oberholser, loc. cit. supra, which was described on two males with wings, 108 and 112 mm.



FIG. 1.

BATU BERHALA, PULAU AOR.



H. C. Robinson, Photo.

FIG. 2.

BIRD ROCK, SRI BUAT.



FIG. 1.

PULAU TINGGI, WESTERN SIDE.

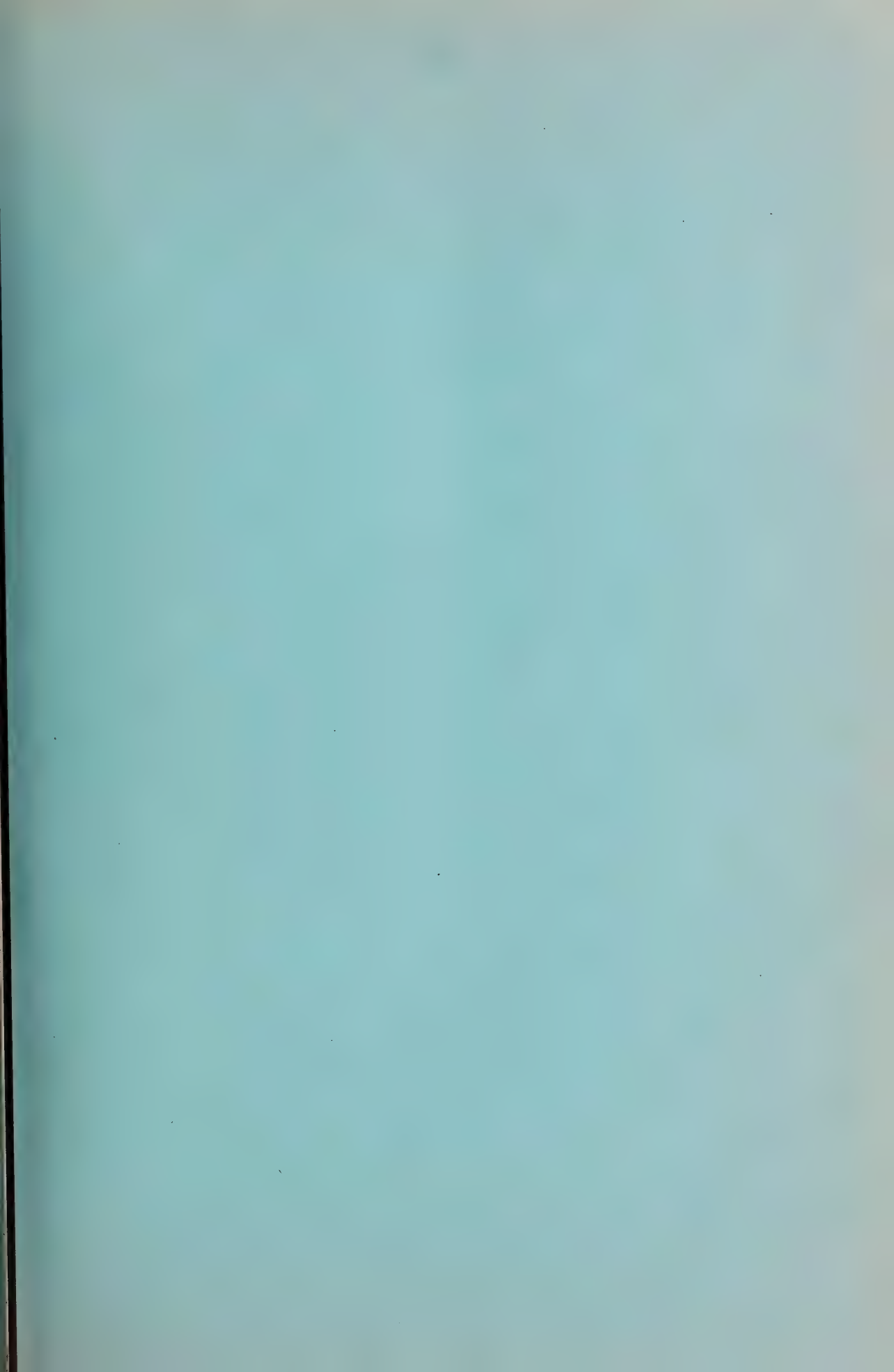


H. C. Robinson. Photo.

FIG. 2.

N.E. POINT, WESTERN ISLAND, SRI BUAT.





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PART II.

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¹—*Mycteromys*, nom. nov.

²—*Rattus*.

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V. Addenda and Index

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II. BIRDS.

(Plates II—V)

H. C. ROBINSON, *C.M.Z.S.*, *M.B.O.U.* AND
C. BODEN KLOSS, *F.Z.S.*, *M.B.O.U.*

The collection of Birds made by us in Sumatra almost entirely within the district of Korinchi, though some few species were obtained at Pasir Ganting on the coast while waiting for our steamer, comprises about 2,097 specimens, and is probably by far the largest got together within a comparatively limited area in the island.

The possession of very large and complete collections of birds from the Malay Peninsula and from the mountains of Java, east and west, as well as a series of the commoner lowland Bornean birds from Sarawak has enabled us to go into the question of local races with some degree of confidence. Besides our own collections we are in possession of a set of specimens from the mountains of the Bencoolen and Palembang residencies and the Mt. Ophir district in Padang, collected by Mr. E. Jacobsen and presented to the F.M.S. Museums, while we have had the advantage of studying a large collection from various altitudes in N.E. Sumatra collected by Mr. A. F. C. A. van Heyst, so that, altogether, the material that has passed through our hands, in compiling the present account, has not fallen far short of six thousand skins.

We have given the synonymy in considerable detail but may here recapitulate the principal separate articles dealing with the avifauna of Sumatra.

1. 1822. Second Part of the Descriptive Catalogue of a Zoological Collection made in the Island of Sumatra and its Vicinity. By Sir Thomas Stamford Raffles, Knt., F.R.S.
Transactions of the Linnean Society of London, Vol. XIII, Part II, pp. 277-331.
2. 1830. Memoir of Life and Public Services of Sir Thomas Stamford Raffles, F.R.S. By his Widow. London, 1830.
Catalogue of Zoological Specimens, pp. 648-685, by N. A. Vigors.
3. 1839-44. Verhandelingen over de Natuurlijke Geschiedenis der Nederlandsche overzeesche bezittingen: Zoologie, 1839-44.
4. 1873. Acheen, by A. O. Hume.
Stray Feathers. Vol. I, pp. 441-463 (1873).

Part II; Vertebrata.

5. 1877. On a Collection of Birds made by Mr. E. C. Buxton in the District of Lampong, S. E. Sumatra. By Arthur, Marquis of Tweeddale, M.B.O.U.
Ibis, 1877, pp. 283-323.
6. 1879. Catalogo di Una Collezione di Uccelli fatta nella Parte Occidentale di Sumatra, dal Prof. Odoardo Beccari e descritta da Tommaso Salvadori.
Ann. Mus. Civ. Gen. XIV, pp. 169-253 (1879).
7. 1880. Contribution to the Ornithology of Sumatra—Report on a Collection from the neighbourhood of Padang. By R. G. Wardlaw Ramsay, F.Z.S., 67th Regiment.
Proceedings of the Zoological Society of London, 1880, pp. 13-16, pl. I.
8. 1882. On Collections of Birds made by Mr. H. O. Forbes in South-Eastern Sumatra. By F. Nicholson.
Ibis, 1882, pp. 51-65.
9. 1883. On A Second Collection of Birds made in the Island of Sumatra by Mr. H. O. Forbes. By Francis Nicholson.
Ibis, 1883, pp. 234-257, pl. X.
10. 1885. A Naturalist's Wanderings in the Eastern Archipelago, by Henry O. Forbes, F.R.G.S. London, 1885.
Appendix to Part III. II.—*List of the Birds of Sumatra*, pp. 268-274.
11. 1887. On A Collection of Birds made by Dr. C. Klaesi in the Highlands of Padang (W. Sumatra) during the winter, 1884-85 by J. Buttikofer.
Notes from the Leyden Museum, IX, pp. 1-96 (1887).
12. 1887. Bijdragen tot de Kennis der Fauna van Midden-Sumatra, door Joh. F. Snelleman. Eerste Deel. Leyden, 1887.
Zoogdieren en Vogels, pp. 1-58, pls. I-IV.
13. 1890. Les Oiseaux de Sumatra et leur Presence dans les Iles Avoisinantes, par A. G. Vorderman.
Nat. Tijds. Nederl. Ind. Batavia XLIX, pp. 381-442 (1890).
14. 1890. Zur Ornithologie der indisch-malaiischen Gegenden: I. Sumatra, von E. Hartert.
Journ. f. Ornith. 1889, pp. 346-379 (1890).
15. 1891. Catalogo di una Collezione di Uccelli di Sumatra fatta dal Dott. Elio Modigliani e descritta da Tommaso Salvadori.
Ann. Mus. Civ. Gen (2a) XII, pp. 40-78 (1891).

16. 1896. Catalogo di una Collezione di Uccelli delle vicinanze di Deli in Sumatra. Tommaso Salvadori.
Boll. Mus. Zool. ed. Anat. Comp. Turin, XI, No. 250, pp. 1-14 (1896).
17. 1902. Aus Den Wanderjahren eines Naturforschers: Naturgeschichtliches aus Sumatra. Von Ernst Hartert.
Nov. Zool. IX, pp. 193-220 (1902).
18. 1903. Birds collected by Dr. W. L. Abbott on the Coast and Islands of North-West Sumatra. By Charles W. Richmond.
Proc. U. S. Nat. Mus. XXVI, pp. 485-523 (1903).
19. 1907. Beitrage zur Ornithologie Sumatra und der Insel Banka von Dr. C. Parrot.
Abhandl. der Konigl. Bayer. Akad. der Wissensch. Munchen, II, XI. XXIV. Bd. I., pp. 152-285 (1907).
20. 1911. On Some New or Rare Birds from Sumatra, Java, Ceram and the Poeloe Toedjoe Group, North of Ceram, by Dr. E. D. Van Oort.
Notes from the Leyden Museum, XXXIV, pp. 59-65 (1911).
21. 1912. Descriptions of One Hundred and Four New Species and Subspecies of Birds from the Barussan Islands and Sumatra. By Harry S. Oberholser.
Smithsonian Misc. Coll. Vol. 60, No. 7, pp. 1-22 (1912).
22. 1916. Preliminary Diagnoses of some New Species and Subspecies of Mammals and Birds obtained in Korinchi, West Sumatra, Feb.-June, 1914. By Herbert C. Robinson and C. Boden Kloss.
Journ. Straits Branch Royal Asiatic Soc., No 73, pp. 269-278 (1916).

SUMMARY AND COMPARISON BETWEEN THE FAUNAS OF KORINCHI PEAK; MT. KINABALU, BORNEO; AND THE MOUNTAINS OF THE MALAY PENINSULA.

Including the collections made in the lower valley and excluding all water and swamp birds we obtained 171 species in Korinchi, of which 54 species, but only one genus, are peculiar to Sumatra. It seems probable moreover that, with the possible exception of *Turdus indrapuræ*, no species will be found peculiar to this mountain mass, as the very extensive

collections made show no great differences from those of Mt. Singgalang, Mt. Merapi and the Battak Highlands, made by Mueller, Beccari and Modigliani.

The mountains of the Malay Peninsula, which have been intensively studied, are inhabited by roughly 250 species, of which about 38 species, but no genus, are endemic. The fauna was worked out in detail some years ago (Journ. Fed. Malay States Mus. ii, pp. 164-222, 1909), but recent work and collections have in no way modified the general conclusions there arrived at.

The endemic forms in the Malay Peninsula are very slightly modified from their congeners inhabiting Borneo, Sumatra and Tenasserim, while the greater number of species compared with Korinchi and Kinabalu is accounted for by the very much larger area covered.

To bring Dr. Sharpe's summary of the Avifauna of Kinabalu (Ibis, 1890, pp. 273-292) strictly up to date would involve considerable labour and would not materially alter the conclusions derived from Whitehead's large collection.

Whitehead collected on the mountain, from sea level to the summit, 161 species; or from the 1,000 feet level, which eliminates many not strictly montane forms, 112 species. After allowing for recent work in other areas, about 45 of these species have not been obtained elsewhere than in Borneo.

In tabular form the avifauna of the three mountain areas may be shown as

Mountain.	No. of species.	Peculiar Species.	P/C peculiar species.	Peculiar Genera.
Korinchi	171	54	31.6	One.
Kinabalu	161	45	27.9	Five.
Malay Peninsula	250	38	15.2	None.

ZONAL FAUNAS.

A.	12,000	—	10,000	Above the Forest or Alpine Zone.
B.	10,000	—	6,000	Forest Zone on Peak.
C.	6,000	—	4,000	Forest Zone at base of Peak.
D.	4,000	—	3,000	Upper Korinchi Valley Slopes.
E.	3,000	—	2,000	Lower Korinchi Valley Slopes and Valley Floor.

ZONE A. 12,000 feet—10,000 feet.

In this zone, 10,000 feet—12,000 feet, from the superior limit of the forest to the summit of the mountain, the following seventeen species of birds occurred, of which one only, *Turdus indrapuræ*, was confined to it, though several, marked with an asterisk, extend beyond to the 7,300 feet level and even below it. The reappearance of one form, *Pycnonotus bimaculatus*, at high levels is curious, insomuch as the same

anomaly of distribution occurs with this species in East and West Java.

- | | |
|--------------------------------------|--|
| 1. <i>Sphenocercus korthalsi</i> .†* | 2. <i>Macropygia leptogrammica</i> .* |
| 3. <i>Scolopax saturata</i> .†* | 4. <i>Parus cinerus</i> .†* |
| 5. <i>Niltava sumatrana</i> .† | 6. <i>Cryptolopha t. trivirgata</i> .* |
| 7. <i>Cichloselys davisoni</i> .† | 8. <i>Oreocincla horsfieldi</i> .† |
| 9. <i>Arrenga melanura</i> .* | 10. <i>Turdus indrapuræ</i> .† |
| 11. <i>Cettia sumatrana</i> . | 12. <i>Pycnonotus bimaculatus</i> .†* |
| 13. <i>Heteroxenicus saturatus</i> . | 14. <i>Stachyridopsis c. bocagei</i> .†* |
| 15. <i>Sibia simillima</i> .†* | 16. <i>Pnoepyga lepida</i> .†* |
| 17. † <i>Zosterops montana</i> . | |

The following species are peculiar to Sumatra.

Species.	Nearest Ally.	Locality of nearest Ally.
1. <i>Niltava sumatrana</i>	<i>Niltava oatesi</i>	... Tenasserim.
2. <i>Arrenga melanura</i>	<i>Arrenga robinsoni</i>	Mountains of Malay Peninsula, Java.
	<i>Arrenga cyanea</i>	
3. <i>Sibia simillima</i> ...	<i>Sibia picata</i>	... Tenasserim.
	<i>Sibia wrayi</i>	... Mountains of Malay Peninsula.
4. <i>Stachyridopsis c. bocagei</i> .	<i>St. c. assimilis</i>	... Tenasserim.
5. <i>Pnoepyga lepida</i> ...	<i>Pnoepyga rufa</i>	... Java.
6. <i>Zosterops montana</i>	<i>Zosterops japonica</i>	... Japan.
7. <i>Turdus indrapuræ</i>	<i>Turdus fumidus</i>	... West Java.
8. <i>Cettia sumatrana</i>	<i>Cettia oreophila</i>	... Borneo.

Of these eight species the affinities of three are entirely with the mainland of Asia; two are entirely with Java and only one is more closely related to Bornean species.

Of the whole seventeen species in the list 12 marked with a † have no representatives in the mountains of Borneo, while of these 12, three, viz. *Niltava sumatrana*, *Sibia simillima* and *Stachyridopsis chrysæa bocagei* are closely related to purely continental forms which in two cases are not even represented generically on other Indo-Malayan Islands. The remaining nine are all either identical with birds inhabiting the highlands of Java or most closely allied thereto, while five out of the nine are also represented in the mountains of the Malay Peninsula.

The five forms, viz.—

<i>Cettia sumatrana</i>	<i>Arrenga melanura</i>
<i>Heteroxenicus saturatus</i>	<i>Cryptolopha t. trivirgata</i>
<i>Macropygia leptogrammica</i> ,	

which occur or have closely related representatives on Kina-balû are also known from Java or have equally closely allied forms there and, with the exception of *Cettia* and *Heteroxenicus saturatus*, are also represented in the Malay Peninsula.

It will thus be seen that the fauna of the highest levels is predominantly Javan, no less than 13 out of seventeen species being represented in that island also, while of the remaining four three are Himalayan forms which have not succeeded in

crossing the Sunda Straits, while the affinities of the last, *Zosterops montana*, are not clear.

If we now consider the corresponding altitudinal zone on Kinabalu (8,000 feet—13,000 feet) we find that Sharpe, in his analysis of the fauna (*Ibis*, 1890, pp. 273-292), gives the following list of birds as occurring in the zone.¹

- | | |
|-----------------------------------|-------------------------------------|
| 1. <i>Pisorhina luciae</i> . | 2. <i>Dendrocitta cinerascens</i> . |
| 3. <i>Pericrocotus montanus</i> . | 4. <i>Muscicapula westermanni</i> . |
| 5. <i>Rhipidura a. atrata</i> . | 6. <i>Cryptolopha trivirgata</i> . |
| 7. <i>Cryptolopha montis</i> . | 8. <i>Cettia oreophila</i> . |
| 9. <i>Turdus seebohmi</i> . | 10. <i>Arrenga borneensis</i> . |
| 11. <i>Chlorocharis emiliae</i> . | 12. <i>Rhinocichla treacheri</i> . |
| 13. <i>Androphilus accentor</i> . | 14. <i>Pteruthius aeralatus</i> . |
| 15. <i>Chlorura borneensis</i> . | 16. <i>Cuculus i. insulinde</i> . |
| 17. <i>Collocalia linchi</i> . | 18. <i>Macropygia ruficeps</i> . |

Of these, all but four occur at some elevation or other on Korinchi Peak, either as identical or very closely related forms, the four more exotic species being, *Turdus seebohmi*, much more closely allied to the Celebesian *T. celebensis* from Bonthain Peak, S. Celebes; *Chlorura borneensis*, a member of a genus of Weaver Finches occurring in Java and the lesser Sunda Ids. and doubtfully in the Malay Peninsula but not as yet recorded from Sumatra, *Chlorocharis emiliae*, the type of a subgenus of *Zosteropidae* of which other races are found in the lesser Sunda Ids., and *Androphilus accentor*, a hedge-sparrow-like bird whose nearest allies are found in the Philippines and New Guinea.

It is therefore evident that at the highest levels on Kinabalu many of the characteristic Javan forms, occurring also on Korinchi Peak, are absent, those that do occur, being stable forms, having a very wide range indeed. The smaller Himalayan section, common to Korinchi and the Mountains of the Malay Peninsula, is also absent, but is replaced to a small extent by species apparently derived from further east.

ZONE B. 10,000 feet—6,000 feet.

For our next altitudinal zone we have taken as limits; 10,000 feet, the superior limit of the forest, and 6,000 feet, the commencement of the true peak of Korinchi, above which there appeared to be no permanently flowing water, though of course regular and defined watercourses existed.

In this zone the following fifty-three species were collected, viz.—

- | | |
|-------------------------------------|--------------------------------------|
| 1. <i>Arboricola rubrirostris</i> . | 2. <i>Acomus inornatus</i> . |
| 3. <i>Sphenocercus korthalsi</i> . | 4. <i>Ptilinopus roseicollis</i> . |
| 5. <i>Carpophaga badia</i> . | 6. <i>Macropygia leptogrammica</i> . |

¹ The nomenclature of these lists has been modified to accord with that used in this paper.

² *Androphilus viridis* Rothschild and Hartert, Nov. Zool. XX, p. 504 (1913) Mt Goliath, Dutch New Guinea.

- | | |
|---|---|
| 7. <i>Scolopax saturata</i> . | 8. <i>Accipiter virgatus</i> . |
| 9. <i>Pisorhina solokensis</i> . | 10. <i>Pisorhina vandewateri</i> . |
| 11. <i>Dendrocitta occipitalis</i> . | 12. <i>Parus cinereus</i> . |
| 13. <i>Oriolus c. consanguineus</i> . | 14. <i>Buchanga s. phædra</i> . |
| 15. <i>Bhringa remifer</i> . | 16. <i>Hemipus picatus</i> . |
| 17. <i>Artamides melanocephalus</i> . | 18. <i>Pericrocotus miniatus</i> . |
| 19. <i>Tarsiger hodgsoni</i> . | 20. <i>Niltava sumatrana</i> . |
| 21. <i>Dendrobiastes h. malayana</i> . | 22. <i>Muscicapula m. westermanni</i> . |
| 23. <i>Culicicapa ceylonensis</i> . | 24. <i>Cryptolopha sumatrensis</i> . |
| 25. <i>Cryptolopha t. trivirgata</i> . | 26. <i>Stoparola ruficrissa</i> . |
| 27. <i>Cettia sumatrana</i> . | 28. <i>Zoothera andromedae</i> . |
| 29. <i>Cichloselys davisoni</i> . | 30. <i>Oreocinclla horsfieldi</i> . |
| 31. <i>Arrenga melanura</i> . | 32. <i>Hemixus sumatranus</i> . |
| 33. <i>Henicurus velatus</i> . | 34. <i>Phyllergates c. sumatranus</i> . |
| 35. <i>Heteroxenicus saturatus</i> . | 36. <i>Garrulax palliatus</i> . |
| 37. <i>Stachyris larvatus</i> . | 38. <i>Thringorhina striolata</i> . |
| 39. <i>Turdinus rufipectus</i> . | 40. <i>Sibia simillima</i> . |
| 41. <i>Mesia laurinae</i> . | 42. <i>Pnoepyga lepida</i> . |
| 43. <i>Pteruthius acralatus cameranoi</i> . | 44. <i>Poliositta azurea expectata</i> . |
| 45. <i>Zosterops montana</i> . | 46. <i>Zosterops atricapilla</i> . |
| 47. <i>Dicaeum beccarii</i> . | 48. <i>Pitta schneideri</i> . |
| 49. <i>Harpalarpactes mackloti</i> . | 50. <i>Psilopogon pyrolophus</i> . |
| 51. <i>Lepocestes porphyromelas</i> . | 52. <i>Chrysocolaptes v. zanthopygius</i> . |
| | 53. <i>Cuculus i. insulinde</i> . |

Of these 53 species three were not found above or below the zone, viz.—

Accipiter virgatus

identical with the bird described from Kinabalu as *A. rufotibialis*, Sharpe, but also identical with the true *A. virgatus* (Temm.) which is found on the high mountains of Java.

Pisorhina vandewateri

Closely allied to *P. luciae*, which was met with lower down the mountain and also occurs on Kinabalu and at high elevations in the Malay Peninsula.

Zoothera andromedae

Not yet met with in Borneo or on the Mainland, but known from Java, the lesser Sunda Ids. and Engano.

Five species occur also in the higher zone only, viz.—

- | | |
|------------------------------------|-------------------------------------|
| 1. <i>Niltava sumatrana</i> . | 2. <i>Cettia sumatrana</i> . |
| 3. <i>Oreocinclla horsfieldi</i> . | 4. <i>Heteroxenicus saturatus</i> . |
| 5. <i>Zosterops montana</i> . | |

No. 1 is a form of continental facies, No. 2 has representatives in Borneo and in Java but not in the Malay Peninsula.

No. 3 is found in the high mountains of Java and the lesser Sunda Ids. and has had very doubtfully distinct races described from the mountains of the northern Malay Peninsula¹ and from North Siam². No. 4 is more closely allied to species from Java and from Borneo, while No. 5, as stated previously, has no near allies.

Nine of the species are found both above and below the zone, viz.—

- | | |
|------------------------------------|--------------------------------------|
| 1. <i>Spenocercus korthalsi</i> . | 2. <i>Macropygia leptogrammica</i> . |
| 3. <i>Scolopax saturata</i> . | 4. <i>Parus cinereus</i> . |
| 5. <i>Cryptolopha trivirgata</i> . | 6. <i>Arrenga melanura</i> . |
| 7. <i>Sibia similima</i> . | 8. <i>Pnoepyga lepida</i> . |
| 9. <i>Cichloselys davisoni</i> . | |

Of these all, except No. 7 which is a continental genus, have representatives or occur in Java, but only Nos. 2, 5, and 6 have Bornean races also.

The following species, from which are excluded those occurring in the zone above, are peculiar to Sumatra :—

Species.	Nearest Ally.	Locality of nearest Ally.
9. <i>Arboricola rubrirostris</i> .	<i>A. campbelli</i>	Malay Peninsula.
10. <i>Acomus inornatus</i> .	—	—
11. <i>Pisorhina solokensis</i> .	<i>P. brookii</i>	Borneo.
12. <i>Pisorhina vandewateri</i> .	<i>P. luciae</i>	Borneo and Malay Peninsula.
13. <i>Dendrocitta occipitalis</i> .	<i>D. cinerascens</i> .	Borneo.
14. <i>Artamides melanocephalus</i> .	<i>A. normani</i> .	Borneo.
15. <i>Cryptolopha sumatrensis</i> .	<i>C. grammiceps</i> .	Java.
16. <i>Oriolus c. consanguineus</i> .	<i>O. c. cruentus</i> .	Java.
17. <i>Stoparola ruficrissa</i> .	<i>St. indigo</i> .	Java.
18. <i>Hemixus sumatranus</i> .	<i>H. malaccensis</i> .	Malay Peninsula.
19. <i>Phyllergates c. sumatranus</i> .	<i>Ph. c. cucullatus</i> .	Java.
20. <i>Garrulax palliatus</i> .	<i>Garrulax schistochlamys</i> .	Borneo.
21. <i>Stachyris larvata</i> .	<i>St. davisoni</i> .	Malay Peninsula.
22. <i>Thringorhina striolata</i> .	<i>Th. guttata</i> .	North Malay Peninsula.
23. <i>Turdinus rufipectus</i> .	<i>T. macrodactyla</i> .	Malay Peninsula.
24. <i>Mesia laurinae</i> .	<i>Mesia argenteauris</i> .	Malay Peninsula.
25. <i>Zosterops atricapilla</i> .	<i>Z. clara</i> .	Borneo.
26. <i>Dicaeum beccarii</i> .	<i>D. ignipectus</i> .	Malay Peninsula.

¹ *Oreocinclia horsfieldi affinis* Richmond, (Proc. Biol. Soc. Washington, XV p. 158 (1902).

² *Turdus aureus angustirostris*, Gyldenstolpe, Ornith. Monatsb., p. 28 (1916); Kungl. Sv. Akad. Handl. Stockholm 56, No. 2, p. 47 (1916).

- | | | |
|---|-----------------------|------------------|
| 27. <i>Pitta schneideri.</i> | <i>P. caerulea.</i> | Malay Peninsula. |
| 28. <i>Hapalarpactes mack-</i>
<i>loti.</i> | <i>H. reinwardti.</i> | Java. |
| 29. <i>Buchanga stigmatops</i>
<i>phaedra.</i> | <i>B. stigmatops.</i> | Borneo. |

Of the 27 species occurring in this zone that are not peculiar to Sumatra, eight are found in Java, Borneo and the Malay Peninsula also, viz:—

- | | |
|--------------------------------|------------------------------------|
| <i>Carpophaga badia.</i> | <i>Macropygia leptogrammica.</i> |
| <i>Tarsiger hodgsoni.</i> | <i>Culicicapa ceylonensis.</i> |
| <i>Cryptolopha trivirgata.</i> | <i>Muscicapula m. westermanni.</i> |
| <i>Accipiter virgatus.</i> | <i>Cuculus i. insulinde.</i> |

while seven are found in Java alone.

- | | |
|--------------------------------|--------------------------------|
| <i>Sphenocercus korthalsi.</i> | <i>Scolopax saturata.</i> |
| <i>Ptilinopus roseicollis.</i> | <i>Pericrocotus miniatus.</i> |
| <i>Zoothera andromedae.</i> | <i>Oreocinclia horsfieldi.</i> |
| | <i>Henicurus velatus.</i> |

Two are from the Malay Peninsula and Java,

- | | |
|-------------------------|------------------------|
| <i>Bhringa remifer.</i> | <i>Parus cinereus.</i> |
|-------------------------|------------------------|

Three are found elsewhere only in the Malay Peninsula,

- | | |
|------------------------------|-------------------------------------|
| <i>Cichloselys davisoni.</i> | <i>Poliositta azurea expectata.</i> |
| | <i>Psilopogon pyrolophus.</i> |

Four occur in the Malay Peninsula and Borneo,

- | | |
|---------------------------------|--|
| <i>Dendrobiastes hyperythra</i> | <i>Chrysocolaptes v. xanthopygius.</i> |
| <i>malayana.</i> | <i>Hemipus picatus.</i> |
| | <i>Lepocestes porphyromelas.</i> |

while one only is found elsewhere only in Borneo, viz:

- Pteruthius aeralatus cameranoi.*

Out of the 53 species found in this zone, therefore, 24 are met with also in Java or are of strong Javan affinities, 26 are met with in the Malay Peninsula or are most closely allied to species from that region, while only nineteen are found in Borneo or come nearest to birds from that island. In this zone, therefore, the continental element is slightly the strongest but is practically equalled by that from Java, while the Bornean factor has become much stronger than it is in the highest zone.

From the corresponding zone on Kinabalu (8,000 feet—4,000 feet), Sharpe records 48 species, viz.—

- | | |
|--------------------------------------|--------------------------------------|
| 1. <i>Dendrocitta cinerascens.</i> | 2. <i>Cissa jefferyi.</i> |
| 3. <i>Chibia borneensis.</i> | 4. <i>Artamides normani.</i> |
| 5. <i>Chlamydochaera jeffreyi.</i> | 6. <i>Dendrobiastes h. malayana.</i> |
| 7. <i>Muscicapula m. westermanni</i> | 8. <i>Tarsiger hodgsoni.</i> |
| 9. <i>Rhipidura a. atrata.</i> | 10. <i>Rhinomyias gularis.</i> |
| 11. <i>Cryptolopha trivirgata.</i> | 12. <i>Cryptolopha montis.</i> |
| 13. <i>Abrornis schwaneri.</i> | 14. <i>Stoparola cerviniventris.</i> |
| 15. <i>Cettia oreophila.</i> | 16. <i>Turdus obscurus.</i> |
| 17. <i>Arrenga borneensis.</i> | 18. <i>Hemixus connectens.</i> |

- | | |
|---------------------------------------|---------------------------------------|
| 19. <i>Oreoctistes leucops</i> . | 20. <i>Herpornis brunnescens</i> . |
| 21. <i>Chlorocharis emiliae</i> . | 22. <i>Brachypteryx erythrogyna</i> . |
| 23. <i>Orthnocichla whiteheadi</i> . | 24. <i>Garrulax schistochlamys</i> . |
| 25. <i>Rhinocichla treacheri</i> . | 26. <i>Allocotops calvus</i> . |
| 27. <i>Stachyris borneensis</i> . | 28. <i>Stachyris poliocephala</i> . |
| 29. <i>Androphilus accentor</i> . | 30. <i>Corythocichla crassa</i> . |
| 31. <i>Turdinulus exsul</i> . | 32. <i>Hyloterpe hypoxantha</i> . |
| 33. <i>Pteruthius ae. cameranoi</i> . | 34. <i>Aethopyga temmincki</i> . |
| 35. <i>Arachnothera juliae</i> . | 36. <i>Zosterops clara</i> . |
| 37. <i>Dicaeum monticola</i> . | 38. <i>Chlorura borneensis</i> . |
| 39. <i>Calyptomena whiteheadi</i> . | 40. <i>Pitta schwaneri</i> . |
| 41. <i>Pyrotrogon whiteheadi</i> . | 42. <i>Cyanops pulcherrima</i> . |
| 43. <i>Lepocestes porphyromelas</i> . | 44. <i>Hierococcyx bocsi</i> . |
| 45. <i>Cuculus i. insulinde</i> . | 46. <i>Collocalia linchi</i> . |
| 47. <i>Carpophaga badia</i> . | 48. <i>Macropygia ruficeps</i> . |

After excluding 12 species that occur on the higher zone of Kinabalu and ten species that occur in identical form on Korinchi, we have left the following 26 species.

- | | |
|--|---------------------------------------|
| 2. <i>Cissa jeffreyi</i> . | 3. <i>Chibia borneensis</i> . |
| 4. <i>Artamides normani</i> . | 5. <i>Chlamydochaera jeffreyi</i> . |
| 10. <i>Rhinomyias gularis</i> . | 14. <i>Stoparola cerviniventris</i> . |
| 16. <i>Turdus obscurus</i> . | 18. <i>Hemixus connectens</i> . |
| 19. <i>Oreoctistes leucops</i> . | 20. <i>Herpornis brunnescens</i> . |
| 22. <i>Heteroxenicus erythrogyna</i> . | 23. <i>Orthnocichla whiteheadi</i> . |
| 24. <i>Garrulax schistochlamys</i> . | 26. <i>Allocotops calvus</i> . |
| 27. <i>Stachyris borneensis</i> . | 28. <i>Stachyris poliocephala</i> . |
| 30. <i>Corythocichla crassa</i> . | 31. <i>Turdinulus exsul</i> . |
| 32. <i>Hyloterpe hypoxantha</i> . | 33. <i>Arachnothera juliae</i> . |
| 36. <i>Zosterops clara</i> . | 37. <i>Dicaeum monticola</i> . |
| 39. <i>Calyptomena whiteheadi</i> . | 40. <i>Pitta schwaneri</i> . |
| 41. <i>Pyrotrogon whiteheadi</i> . | 42. <i>Cyanops pulcherrima</i> . |

Of these 26 species, *Turdus obscurus* may be deducted as being a migrant of no zoogeographical significance, while the following either occur or have very closely allied representative forms in the Malay Peninsula or Sumatra.

- | | |
|---------------------------------------|--|
| 2. <i>Cissa jeffreyi</i> . | 4. <i>Artamides normani</i> . |
| 14. <i>Stoparola cerviniventris</i> . | 18. <i>Hemixus connectens</i> . |
| 20. <i>Herpornis brunnescens</i> . | 22. <i>Heteroxenicus erythrogyna</i> . |
| 24. <i>Garrulax schistochlamys</i> . | 27. <i>Stachyris borneensis</i> . |
| 28. <i>Stachyris poliocephala</i> . | 30. <i>Corythocichla crassa</i> . |
| 31. <i>Turdinulus exsul</i> . | 36. <i>Zosterops clara</i> . |

Of the remaining 13 species, which are all indigenous to Borneo, No. 3, *Chibia borneensis*, may perhaps be considered to represent *Dicruopsis sumatrensis*. No. 5, *Chlamydochaera jeffreyi*, is a monotypic genus of Caterpillar Shrike, probably most closely allied to *Pterodocys* of Australia. No. 10, *Rhinomyias gularis*, is a mountain form of *Rh. pectoralis*, widely spread over the Malayan Region. No. 19, *Oreoctistes leucops*, is another monotypic genus nearest to *Kelaartia* of Ceylon. No. 23, *Orthnocichla whiteheadi* is a small wren-like bird with

allies in Timor and the islands to the East. No. 26, *Allocotops calvus* is a monotypic laughing thrush, with no near allies. No. 32, *Hyloterpe hypoxantha*, is a very distinct species of a genus dominant in the Philippines. No. 33, *Arachnothera juliae*, seems unrelated to any other form of the genus, while No. 37, *Dicaeum monticola*, is a development of the Javan *D. sanguinolentum*. No. 40, *Pitta schwaneri*, is very distinct indeed, as is also No. 39, *Calyptomena whiteheadi*. No. 41, *Pyrotrogon whiteheadi*, is allied to the Philippine *P. ardens*, while the relationships of the last species, No. 42, *Cyanops pulcherrima*, are not well understood though its nearest ally is probably *C. henrici* of the adjacent lowlands, and not *C. incognita* of Tenasserim, with which it has been associated by Shelley and Sharpe.

It will thus be seen that in this zone on Kinabalu the fauna shows a far higher degree of differentiation than is the case with any mountain in the Malay Peninsula, Java or Sumatra, three very distinct genera being confined to the mountain, while the other peculiar species are very distinct indeed from other species of the genera to which they have been referred. Such species are *Calyptomena whiteheadi* and *Arachnothera juliae*. On the whole the balance of evidence is in favour of the supposition that this peculiar fauna is in the main that of an ancient land surface, much more circumscribed than the present Bornean area, to which have been added certain elements derived from further east, probably from an area now represented by the Philippine Ids.

ZONE C. 6,000 feet—4,000 feet.

We have taken as our next altitudinal zone in Korinchi the levels from about 4,000 feet to 6,000 feet, at the foot of the Peak. All our collecting ground in this zone was heavily forested and very productive; the majority of the specimens obtained came from near Sungei Kumbang at about 4,700 feet, but the collections were made and the species certainly ranged within the limits indicated above.

The following 81 forms were obtained in the zone.

- | | |
|---------------------------------------|--|
| 1. <i>Arboricola rubrirostris</i> .† | 2. <i>Acomus inornatus</i> . |
| 3. <i>Chalcurus chalcurus</i> .† | 4. <i>Sphenocercus oxyurus</i> .† |
| 5. <i>Sphenocercus korthalsi</i> . | 6. <i>Ptilinopus roseicollis</i> . |
| 7. <i>Carpophaga badia</i> . | 8. <i>Macropygia leptogrammica</i> .† |
| 9. <i>Macropygia ruficeps</i> .† | 10. <i>Chalcophaps indica</i> . |
| 11. <i>Scolopax saturata</i> . | 12. <i>Neopus malayanus</i> . |
| 13. <i>Spilornis bacha pallidus</i> . | 14. <i>Pisorhina solokensis</i> . |
| 15. <i>Dendrocitta occipitalis</i> .† | 16. <i>Cissa minor</i> . |
| 17. <i>Parus cinereus</i> . | 18. <i>Oriolus c. consanguineus</i> .† |
| 19. <i>Dicruropsis sumatrana</i> .† | 20. <i>Buchanga s. phaedra</i> .† |
| 21. <i>Bhringa remifer</i> . | 22. <i>Hemipus picatus</i> .† |
| 23. <i>Artamides melanocephalus</i> . | 24. <i>Pericrocotus montanus</i> .† |
| 25. <i>Pericrocotus miniatus</i> . | 26. <i>Tarsiger hodgsoni</i> . |

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|---|--|
| 27. <i>Polibmyias mugimuki</i> .† | 28. <i>Dendrobiastes h. malayana</i> . |
| 29. <i>Muscicapula m. westermanni</i> . | 30. <i>Rhipidura a. atrata</i> .† |
| 31. <i>Anthipes solitaria</i> .† | 32. <i>Culicicapa ceylonensis</i> .† |
| 33. <i>Niltava grandis decipiens</i> .† | 34. <i>Cryptolopha sumatrensis</i> .† |
| 35. <i>Cryptolopha muelleri</i> . | 36. <i>Cryptolopha t. trivirgata</i> . |
| 37. <i>Stoparola ruficrissa</i> .† | 38. <i>Phylloscopus borealis</i> . |
| 39. <i>Myiophoneus castaneus</i> .† | 40. <i>Arrenga melanura</i> . |
| 41. <i>Notodela d. sumatrana</i> | 42. <i>Cochoa beccarii</i> . |
| 43. <i>Hemixus sumatranus</i> .† | 44. <i>Henicurus velatus</i> .† |
| 45. <i>Henicurus frontalis</i> . | 46. <i>Suya albigularis</i> .† |
| 47. <i>Phyllergates c. sumatranus</i> . | 48. <i>Heteroxenicus leucophrys</i> . |
| 49. <i>Garrulax palliatus</i> .† | 50. <i>Rhinocichla mitrata</i> .† |
| 51. <i>Stachyris larvata</i> .† | 52. <i>Stachyridopsis c. bocagei</i> . |
| 53. <i>Thringorhina striolata</i> .† | 54. <i>Turdinus rufipectus</i> .† |
| 55. <i>Sibia simillima</i> .† | 56. <i>Mesia laurinae</i> |
| 57. <i>Turdimulus epilepidotus</i> | 58. <i>Rimator albostratus</i> . |
| 59. <i>Pnoepyga lepida</i> .† | 60. <i>Pteruthius aeralatus cameranoi</i> .† |
| 61. <i>Poliositta azurea ex-pectata</i> .† | 62. <i>Dendrophila frontalis</i> . |
| 63. <i>Aethopyga temmincki</i> .† | 64. <i>Arachnothera longirostris</i> .† |
| 65. <i>Arachnothera chrysogenys</i> . | 66. <i>Arachnothera flavigastera</i> .† |
| 67. <i>Arachnothera robusta robusta</i> . | 68. <i>Zosterops atricapilla</i> . |
| 69. <i>Psarisomus dalhousiae psittacinus</i> .† | 70. <i>Pitta schneideri</i> .† |
| 71. <i>Hapalharpactes mackloti</i> .† | 72. <i>Psilopogon pyrolophus</i> |
| 73. <i>Gecinus dedemi</i> . | 74. <i>Lepocestes porphyromelas</i> .† |
| 75. <i>Chrysophlegma mystacale</i> .† | 76. <i>Chrysocolaptes v. zanthopygius</i> .† |
| 77. <i>Cuculus i. insulinde</i> .† | 78. <i>Rhopodytes tristis elongatus</i> .† |
| 79. <i>Rhytidoceros undulatus</i> .† | 80. <i>Collocalia linchi</i> .† |
| 81. <i>Pycnonotus bimaculatus</i> .† | |

Of these 81 forms 46 (marked with a †) extend to the zone above, while 45 are also found at lower levels, the following not being met with outside the levels indicated, viz.—

- | | |
|---------------------------------------|---|
| 1. <i>Chalcophaps indica</i> . | 2. <i>Neopus malayensis</i> . |
| 3. <i>Spilornis baha pallidus</i> . | 4. <i>Cissa minor</i> . |
| 5. <i>Cryptolopha muelleri</i> . | 6. <i>Phylloscopus borealis</i> . |
| 7. <i>Notodela diana sumatrana</i> . | 8. <i>Cochoa beccarii</i> . |
| 9. <i>Henicurus frontalis</i> . | 10. <i>Heteroxenicus leucophrys</i> . |
| 11. <i>Rimator albostratus</i> . | 12. <i>Dendrophila frontalis</i> . |
| 13. <i>Arachnothera chrysogenys</i> . | 14. <i>Arachnothera robusta robusta</i> . |
| 15. <i>Gecinus dedemi</i> . | |

It is practically certain however that these species are not really restricted to this zone, as with the exception of *Notodela diana sumatrana* and *Heteroxenicus leucophrys* only single specimens or very small series have been obtained while *Phylloscopus borealis* is, of course, a migrant.

The following species, so far as is known, are confined to Sumatra.

Species.	Nearest Ally.	Locality of nearest Ally.
30. <i>Chalcurus chalcurus</i> .	<i>Ch. inopinatus</i> .	Mountains of Malay Peninsula.
31. <i>Dicruropsis sumatrana</i> .	<i>Chibia borneensis</i> .	Borneo.
32. <i>Cryptolopha muelleri</i> .	<i>Cr. grammiceps</i> .	Java.
33. <i>Myiophoneus castaneus</i> .	No near ally.	
34. <i>Notodela diana sumatrana</i> .	<i>Notodela diana</i> .	Java.
35. <i>Cochoa beccarii</i> .	<i>Cochoa purpurea</i> .	Himalayas.
36. <i>Suya albigularis</i> .	<i>Suya superciliaris</i> .	Yunnan.
37. <i>Turdinuluse dilutus</i> .	<i>T. e. epilepidotus</i> .	Java.
38. <i>Rimator albobstriatus</i> .	<i>R. malacoptilus</i> .	Himalayas.
39. <i>Psarisomus d. psittacinus</i> .	<i>Psarisomus dalhousiae</i> .	Himalayas.
40. <i>Gecinus dedemi</i> .	No near ally.	
41. <i>Chrysophlegma mystacale</i> .	<i>Ch. wrayi</i> .	Mountains of Malay Peninsula.
42. <i>Rhopodytes t. elongatus</i> .	<i>Rh. t. hainanus</i> .	Malay Peninsula.

Of the forms that are not peculiar to Sumatra occurring in this zone 25 are found also in Java, 26 in Borneo and 33 in the Malay Peninsula, or, put somewhat differently, of the total of 81 species 46 also occur in Borneo or are represented there by closely allied forms, 18 are found in Java, or have their nearest relatives there but are not met with in Borneo, 15 are identical with or nearest to continental forms which have not spread to the Indo-Malayan Ids., while two species, which are peculiar to the island of Sumatra, have no very close relatives.

Of the 46 species which are represented in Borneo, very many also occur in Java so that in this zone, also though not quite to the same extent as at higher altitudes, the Javan element may be said to be predominant.

The Himalaia and Tenasserimese species have increased largely and are here practically equal to those found in Java only.

Dr. Sharpe gives 43 species as inhabiting the corresponding zone of Kinabalu, viz., 3-4,000 feet, though this is narrower than the one we have taken for Korinchi, 21 species are given as not ascending higher and of these 13 are represented in Korinchi, leaving the following nine:—

<i>Rhinomyias ruficrissus</i> .	Allied to a Philippine species.
<i>Geocichla aurata</i> .	Intermediate between a Malayan and a Javan species.
<i>Staphidia everetti</i> .	A member of a continental genus not elsewhere represented in the Indo-Malayan region.

Pitta arcuata.

Cyanops monticola.

Zanclostomus javanicus.

Alcedo euryzona.

Bambusicola erythrophrys.

A doubtful form of *C. mystacophanes*.

A widespread submontane Cuckoo in Indo-Malaya.

Also occurs in Java, Sumatra and Malay Peninsula.

A peculiar Partridge with no near allies in Indo-Malaya.

ZONE D. 4,000 feet—3,000 feet.

The next zone comprises the wooded slopes of the main Korinchi valley from about 3,000 feet to probably somewhat over 4,000 feet. It naturally includes species both from higher and lower levels as well as many forms, which should perhaps, strictly speaking, be regarded as lowland birds. In actual numbers 95 species were collected in this zone, viz:—

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| 1. <i>Arboricola rubrirostris.</i> | 2. <i>Chalcurus chalcurus.</i> |
| 3. <i>Macropygia leptogrammica.</i> | 4. <i>Macropygia ruficeps.</i> |
| 5. <i>Streptopelia tigrina.</i> | 6. <i>Haliastur intermedius.</i> |
| 7. <i>Elanus hypoleucus.</i> | 8. <i>Huhua orientalis sumatrana.</i> |
| 9. <i>Pisorhina luciae.</i> | 10. <i>Dendrocitta occipitalis.</i> |
| 11. <i>Oriolus maculatus.</i> | 12. <i>Oriolus zanthonotus.</i> |
| 13. <i>Oriolus c. consanguineus.</i> | 14. <i>Dicruropsis sumatranus.</i> |
| 15. <i>Buchanga s. phaedra.</i> | 16. <i>Bhringa remifer.</i> |
| 17. <i>Hemipus picatus.</i> | 18. <i>Artamides melanocephalus.</i> |
| 19. <i>Pericrocotus montanus.</i> | 20. <i>Lalage culminata.</i> |
| 21. <i>Rhinomyias o. brunneicauda.</i> | 22. <i>Cyornis unicolor infuscata.</i> |
| 23. <i>Anthipes solitaria.</i> | 24. <i>Niltava grandis decipiens.</i> |
| 25. <i>Poliomyias mugimuki.</i> | 26. <i>Dendrobiastes h. malayana.</i> |
| 27. <i>Hypothymis azurea prophata.</i> | 28. <i>Rhipidura albicollis atrata.</i> |
| 29. <i>Terpsiphone paradisi affinis.</i> | 30. <i>Philentoma velatum.</i> |
| 31. <i>Culicicapa ceylonensis.</i> | 32. <i>Stoparola ruficrissa.</i> |
| 33. <i>Stoparola thalassinoides.</i> | 34. <i>Cichloselys davisoni.</i> |
| 35. <i>Myiophoneus castaneus.</i> | 36. <i>Myiophoneus f. dicrorhynchus.</i> |
| 37. <i>Arrenga melanura.</i> | 38. <i>Larvivora cyanea.</i> |
| 39. <i>Chloropsis media.</i> | 40. <i>Chloropsis venusta.</i> |
| 41. <i>Hemixus sumatranus.</i> | 42. <i>Gymnocrotaphus tygus.</i> |
| 43. <i>Alcurus leucogrammicus.</i> | 44. <i>Criniger sumatranus.</i> |
| 45. <i>Trachycomus ochrocephalus.</i> | 46. <i>Pycnonotus bimaculatus.</i> |
| 47. <i>Henicurus velatus.</i> | 48. <i>Suya albigularis.</i> |
| 49. <i>Garrulax bicolor.</i> | 50. <i>Garrulax palliatus.</i> |
| 51. <i>Melanocichla lugubris.</i> | 52. <i>Rhinocichla mitrata.</i> |
| 53. <i>Stachyris larvata.</i> | 54. <i>Stachyridopsis c. bocagei.</i> |
| 55. <i>Thringorhina striolata.</i> | 56. <i>Turdinus rufpectus.</i> |
| 57. <i>Malacocincla sepiaria sepiaria.</i> | 58. <i>Sibia simillima.</i> |
| 59. <i>Turdinulus e. dilutus.</i> | 60. <i>Pnoepyga lepida.</i> |
| 61. <i>Lanius bentet.</i> | 62. <i>Lanius luconiensis.</i> |
| 63. <i>Pteruthius ae. cameranoi.</i> | 64. <i>Poliositta a. expectata.</i> |
| 65. <i>Aethopyga temmincki.</i> | 66. <i>Arachnothera flavigastera.</i> |
| 67. <i>Zosterops buxtoni.</i> | 68. <i>Dicaeum beccarii.</i> |

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| 69. <i>Hirundo gutturalis</i> . | 70. <i>Limonidromus indicus</i> . |
| 71. <i>Anthus r. malayensis</i> . | 72. <i>Calornis p. strigata</i> . |
| 73. <i>Ploceus p. infortunatus</i> . | 74. <i>Artamus leucogaster</i> . |
| 75. <i>Munia p. nisoria</i> . | 76. <i>Munia maja</i> . |
| 77. <i>Psarisomus d. psittacinus</i> . | 78. <i>Serilophus l. intensus</i> . |
| 79. <i>Pitta schneideri</i> . | 80. <i>Pitta venusta</i> . |
| 81. <i>Hapalharpactes mackloti</i> . | 82. <i>Cyanops oorti</i> . |
| 83. <i>Xantholaema haematocephala</i> . | 84. <i>Lepocestes porphyromelas</i> . |
| 85. <i>Chrysophlegma mystacale</i> . | 86. <i>Chrysocolaptes v. zanthopygius</i> . |
| 87. <i>Suiniculus lugubris</i> . | 88. <i>Rhopodytes t. elongatus</i> . |
| 89. <i>Centropus b. javanensis</i> . | 90. <i>Rhytidoceros undulatus</i> . |
| 91. <i>Anorhinus galeritus</i> . | 92. <i>Carcineutes pulchellus</i> . |
| 93. <i>Halcyon chloris</i> . | 94. <i>Tachornis infumata</i> . |
| 95. <i>Collocalia linchi</i> . | |

Of these 95 species 51 are found at higher levels, 22 are found at lower but not at higher levels, while 22 were only met with at this station.

Most of these were common open-country or migratory birds but amongst them were the following:—

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| 1. <i>Huhua orientalis sumatrana</i> . | 2. <i>Pisorhina luciae</i> . |
| 3. <i>Lalage culminata</i> . | 4. <i>Rhinomyias olivacea brunneicauda</i> . |
| 5. <i>Gymnocrotaphus tygus</i> . | 6. <i>Alcurus leucogrammicus</i> . |
| 7. <i>Malococincla s. sepiaria</i> . | 8. <i>Serilophus l. intensus</i> . |
| 9. <i>Anorrhinus galeritus</i> . | 10. <i>Tachornis infumata</i> . |

Of these Nos. 1, 5, 6 and 8 are peculiar to Sumatra and Nos. 5 and 6 are strongly differentiated forms, *Gymnocrotaphus* being the only genus of birds confined to Sumatra.

It is not worth while to compare this zone with one on Kinabalu (3,000 feet—1,000 feet), the only feature of interest being the occurrence of the continental broadbill, *Serilophus*, which is not found in Java or Borneo, while *Gymnocrotaphus*, a peculiar bulbul, is the only Avian genus confined to Sumatra.

Species.	Nearest Ally.	Locality of nearest Ally.
43. <i>Huhua o. sumatrana</i>	<i>Huhua o. orientalis</i> ...	Java.
44. <i>Rhinomyias o. brunneicauda</i> .	<i>Rhinomyias olivacea</i> ...	Tenasserim & N. Malay Peninsula.
45. <i>Chloropsis media</i> ...	<i>Chloropsis kinabaluensis</i>	Borneo.
46. <i>Chloropsis venusta</i> ...	No near ally	—
47. <i>Gymnocrotaphus tygus</i>	"	—
48. <i>Alcurus leucogrammicus</i> .	<i>Alcurus striatus</i> ...	Tenasserim.
49. <i>Criniger sumatranus</i>	<i>Criniger ruficissus</i> ...	Borneo.
50. <i>Garrulax bicolor</i> ...	<i>Garrulax diardi</i> ...	Siam.
51. <i>Serilophus l. intensus</i>	<i>Serilophus l. rothschildi</i>	Malay Peninsula.
52. <i>Pitta venusta</i> ...	<i>Pitta ussheri</i> ...	Borneo.

ZONE E. 3,000 feet—2,000 feet.

The last zone that we have included in the Korinchi Avifauna is that of the valley bottom and lower valley slopes in the vicinity of the lake, lying between about 2,400 and 3,000 feet.

In this zone, excluding water and limicoline birds of no distributional interest, 75 species were collected, viz:—

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| 1. <i>Caloperdix oculea sumatrana</i> . | 2. <i>Chalcurus chalcurus</i> . |
| 3. <i>Spenocercus oxyurus</i> . | 4. <i>Osmotreron vernans</i> . |
| 5. <i>Macropygia ruficeps nana</i> . | 6. <i>Streptopelia tigrina</i> . |
| 7. <i>Elanus hypoleucus</i> . | 8. <i>Pisorhina lempiji</i> . |
| 9. <i>Corvus enca compiler</i> . | 10. <i>Dendrocitta occipitalis</i> . |
| 11. <i>Oriolus maculatus</i> . | 12. <i>Dicruropsis sumatranus</i> . |
| 13. <i>Buchanga s. phaedra</i> . | 14. <i>Bhringa remifer</i> . |
| 15. <i>Hemipus picatus</i> . | 16. <i>Platylophus coronatus</i> . |
| 17. <i>Pericrocotus zanthogaster</i> . | 18. <i>Lalage terat</i> . |
| 19. <i>Poliomyias mugimuki</i> . | 20. <i>Gerygone modiglianii</i> . |
| 21. <i>Terpsiphone paradisi affinis</i> . | 22. <i>Abrornis superciliaris schwanneri</i> . |
| 23. <i>Stoparola thalassinoides</i> . | 24. <i>Geocichla interpres</i> . |
| 25. <i>Copsychus saularis musicus</i> . | 26. <i>Chloropsis media</i> . |
| 27. <i>Criniger sumatranus</i> . | 28. <i>Trachycomus ochrocephalus</i> . |
| 29. <i>Pycnonotus analis</i> . | 30. <i>Pycnonotus bimaculatus</i> . |
| 31. <i>Henicurus velatus</i> . | 32. <i>Cisticola cisticola</i> . |
| 33. <i>Orthotomus ruficeps</i> . | 34. <i>Suya albigularis</i> . |
| 35. <i>Alcippe cinerea</i> . | 36. <i>Mixornis pileata sumatrana</i> . |
| 37. <i>Eupetes macrocercus</i> . | 38. <i>Pomatorhinus borneensis</i> . |
| 39. <i>Garrulax bicolor</i> . | 40. <i>Melanocichla lugubris</i> . |
| 41. <i>Rhinocichla mitrata</i> . | 42. <i>Stachyris larvata</i> . |
| 43. <i>Stachyridopsis poliogaster</i> . | 44. <i>Thringorhina striolata</i> . |
| 45. <i>Turdinulus epilepidotus dilutus</i> . | 46. <i>Lanius bentel</i> . |
| 47. <i>Aethopyga siparaja siparaja</i> . | 48. <i>Cyrtostomus ornata</i> . |
| 49. <i>Anthothreptes malaccensis</i> . | 50. <i>Arachnothera longirostris</i> . |
| 51. <i>Arachnothera flavigaster</i> . | 52. <i>Arachnothera robusta</i> . |
| 53. <i>Zosterops buxtoni</i> . | 54. <i>Dicaeum sumatranum</i> . |
| 55. <i>Hirundo javanica</i> . | 56. <i>Calornis panayensis strigata</i> . |
| 57. <i>Artamus leucogaster</i> . | 58. <i>Ploceus passerinus infortunatus</i> . |
| 59. <i>Munia acuticauda</i> . | 60. <i>Eurylaemus ochromelas</i> . |
| 61. <i>Pitta venusta</i> . | 62. <i>Hapalharpactes mackloti</i> . |
| 63. <i>Calorhamphus hayi</i> . | 64. <i>Chotochea chrysopogon</i> . |
| 65. <i>Cyanops oorti</i> . | 66. <i>Zantholaema haematocephala</i> . |
| 67. <i>Psilopogon pyrolophus</i> . | 68. <i>Micropternus b. badius</i> . |
| 69. <i>Chrysophlegma miniatum malaccense</i> . | 70. <i>Chrysocolaptes validus xanthopygius</i> . |
| 71. <i>Cacomantis sepulchralis sepulchralis</i> . | 72. <i>Penthoceryx pravata</i> . |
| 73. <i>Rhopodytes tristis elongatus</i> . | 74. <i>Centropus javanensis</i> . |
| | 75. <i>Lyncornis temminckii</i> . |

Of these, with the exception of species previously mentioned, only the following appear to be confined to Sumatra, viz:—

Species.	Nearest Ally.	Locality of nearest Ally.
53. <i>Caloerodix o. sumatrana</i> .	<i>Caloerodix ocula</i> .	Malay Peninsula.
54. <i>Platylophus coronatus</i> .	<i>Pl. lemprieri</i> .	Borneo.
55. <i>Dicaeum sumatranum</i> .	<i>D. cruentatum</i> .	Malay Peninsula.

In this zone we reach the lower limit of the true mountain fauna and only the following fourteen species do not extend as far as sea level, though two, *Garrulax bicolor* and *Melanocichla lugubris*, were not found at higher elevations than the upper limit of the zone.

1. <i>Chalcurus chalcurus</i> .	2. <i>Dendrocitta occipitalis</i> .
3. <i>Dicruropsis sumatranus</i> .	4. <i>Buchanga stigmatops phædra</i> .
5. <i>Bhringa remifer</i> .	6. <i>Hemipus picatus</i> .
7. <i>Garrulax bicolor</i> .	8. <i>Melanocichla lugubris</i> .
9. <i>Rhinocichla mitrata</i> .	10. <i>Turdinulus epilepidotus dilutus</i> .
11. <i>Hapalharpactes mackloti</i> .	12. <i>Cyanops oorti</i> .
13. <i>Psilopogon pyrolophus</i> .	14. <i>Rhopodytes tristis elongatus</i> .

The Javan element is here at its minimum, only three species, Nos. 5, *Bhringa remifer*, 10, *Turdinulus epilepidotus dilutus*, 11, *Hapalharpactes mackloti*, having their closest relations in that island; the continental element is strong, vide, 8, *Melanocichla lugubris*, 12, *Cyanops oorti*, 13, *Psilopogon pyrolophus*, all occurring in the Malay Peninsula, while certain species extend to Borneo or are represented there but are not found in Java, such as *Dendrocitta occipitalis*, *Buchanga stigmatops phædra*, *Rhinocichla mitrata* and *Hemipus picatus*.

GENERAL CONCLUSIONS.

The foregoing analysis of the collection enables us to formulate with some degree of confidence the following conclusions.

A. The highest elevations of Korinchi Peak are inhabited, almost exclusively, by a fauna which to all intents and purposes is identical with that found on the higher elevations of the island of Java and the smaller islands to the east and is very much more distantly related to that of similar zones on Kinabalu.

B. In addition to this Javan element, a small proportion of the species is of recent continental origin, occurring on the mountains of the Himalayas and the mountains of Tenasserim and the Malay Peninsula but not spreading to either Java or Borneo.

C. At somewhat lower elevations this Tenasserimese element becomes more strongly marked and certain genera occur that are not represented in the Malay Peninsula (*Rimator*, *Alcurus*), though others which are found in the Malay Peninsula are not represented (*Cutia*, *Gampsorhynchus*, *Siva*, *Pseudominla*.) With this element also is present a larger proportion of what may be termed Himalayo-Sondaic species, i.e., closely allied forms of genera of wide distribution, which in most cases are represented at medium elevations from the Himalayas to the Malay Peninsula, Java, Sumatra and Borneo, ranging on in some cases to the lesser Sunda Ids. and the Philippines. Such genera are *Heteroxenicus*, *Cryptolopha*, *Garrulax*, *Muscicapula* and *Stachyris*.

In Sumatra this element at lower elevations submerges and swamps the Tenasserimese forms and is itself finally merged in the ordinary Indo-Malayan fauna which spreads, almost unmodified, over the greater Sunda Islands, the Malay Peninsula and Southern Tenasserim, though in Java a certain differentiation begins to show itself. This fauna may be typified by such genera as *Eurylaemus*, *Miglyptes*, *Lepocestes*, *Pyrotrogon*, *Rhopodytes* and *Cyanops*.

In conclusion it is borne-in on the student of the geornithology of the high mountains of Indo-Malaya that the most dominant fact is that the peculiar elements in the fauna of Kinabalu and of Borneo generally are far more differentiated than those of any other district in Indo-Malaya. Not only does that mountain possess several distinct genera but even its Indo-Malayan species, such, for instance, as *Arachnothera juliae*, *Calyptomena whiteheadi*, *Pyrotrogon whiteheadi*, are far more distinct from other members of the genus than are the endemic forms of Sumatra, Java and the Malay Peninsula, which usually stand in little more than subspecific relation to each other.

With the exception of the somewhat doubtful Pycnonotine form, *Gymnocrotaphus*, Sumatra possesses no peculiar avian genus, though it shares with the Himalayas the highly peculiar form, *Rimator*, and with the Malay Peninsula the barbet *Psilopogon*. The Malay Peninsula possesses no peculiar form and Java has but two, *Psaltia* and *Laniellus*, sharing with the Himalayas the finch *Hypocanthus*.

Kinabalu alone, on the other hand, possesses the following, absolutely confined to Borneo, which in addition possesses several other genera, notably *Pityriasis* and *Lobiophasis* of varying degrees of distinctness.

The Kinabalu genera are:—

Chlamydochaera.
Allocotops.

Oreoctistes.
Haematortyx.

These facts lend support to the theory that in early tertiary times Borneo was of very much smaller extent than is at present the case, having a very indented coast and much

the same outline as Celebes has at the present. It is at any rate certain that the granitic mass of Kinabalu must have been separated from the other Indo-Malayan land-masses at a period subsequent to the evolution of many existing genera but yet at a period much more remote than the separation of Java from Sumatra by the Sunda Straits or the Malay Peninsula from Sumatra.

1. *Arboricola rubrirostris* (Salvad.).

Pelopardix rubrirostris, Salvad. Ann. Mus. Civ. Gen. xiv, p. 251 (1879); Snelleman in Midden-Sumatra Exped. Vogels iv, p. 46, pl. iii (1887); Buttikofer, Notes Leyden Mus. ix, p. 78 (1887); Vorderman Nat. Tijds. Nederl. Ind. xlix, p. 414, no. 435 (1889).

Arboricola rubrirostris, Grant, Ibis, 1892, p. 396; id. Cat. Birds Brit. Mus. xxii, p. 215 (1893); id. Ibis, 1905, p. 167.

a-c. 2 ♂, 1 ♀. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 18-25th March, 1914. [Nos. 215, 360, 424.]

d-f¹. 11 ♂, 11 ♀, 7 ♂ imm. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. 2nd April-15th May, 1914. [Nos. 557-8, 663-4, 689-691, 756, 844-5, 878, 894, 921, 922, 957-8, 1019-22, 1033, 1036-7, 1084-7, 1089, 1581.]

g¹-h¹. 7 ♂, 2 ♀, 1 ♂ imm. Korinchi Peak, Sumatra, 7,300 feet. 24th April-13th May, 1914. [Nos. 1117, 1121, 1177-8, 1313, 1374, 1410, 1431-2, 1514.]

"Male, irides hazel, orbital skin crimson lake, bill coral red, feet vermilion; females and young birds have the colours duller, the feet more orange."

Extremely abundant in the flat jungle land in the neighbourhood of Sungei Kumbang and apparently fairly common around Siolak Daras, where several snared birds were brought to us by the natives. Found in pairs, or small coveys, running with great speed when disturbed and only taking to flight with reluctance. The note is a clear single whistle like that of *Rollulus roulroul*, but louder.

The large series before us, nearly all of birds in fresh plumage and nearly all fully adult, shows that the differences in the sexes of this species are but slight. Laid out by sexes it can be seen that on the average the throat of the females is very much blacker than that of the males, while the feathers of the breast below the pectoral band are greyer than the males. The banding on the upper surface is on the whole less marked in the male than in the female and the dimensions of the latter, especially those of the tarsus and bill, are decidedly smaller.

Immature birds have the pileum partly brown and fledglings have the large black barrings on the flanks imperfectly developed. The distribution and number of the curious filamentous white feathers with spatulate tips on the head and breast is very variable and irregular but they are not present in young birds.

The flesh of this bird is firm and white, but somewhat dry, and inferior for the table to that of *Calooperdix oculea*, *Rollulus roulroul* and *Tropidoperdix charltoni*.

2. *Calooperdix oculea* subsp. **sumatrana**, Grant.

Calooperdix oculea (Salvad. nec. Temm.) Ann. Mus. Civ. Gen. xiv, p. 252 (1879); Nicholson, Ibis, 1883, p. 255; Buttiköfer, Notes Leyden Mus. ix, p. 78 (1887); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 414, no. 432 (1889).

Calooperdix sumatrana, Ogilvie Grant, Cat. Birds Brit. Mus. xxii, p. 224 (1893).

a. 1♂. Sandaran Agong, Korinchi Valley, Sumatra, 3,450 feet. 4th June, 1914. [No. 1861.]

"Iris hazel, bill brownish horn, feet yellowish brown."

Compared with seven specimens of the typical race from the Malay Peninsula, this bird agrees with Ogilvie Grant's diagnosis in being decidedly darker above, having the feathers of the crown and the middle of the breast with a subterminal bar of black and the primaries and secondaries darker greyish olive.

The bars on the black feathers of the mantle run almost straight across the feather and are yellowish, not pure white in tone. In the mainland form the bars are semi-lunate, following the outline of the feather, giving a squamate appearance.

Rollulus roulroul (Scop.).

Rollulus roulroul (Scop.); Salvad. Ann. Mus. Civ. Gen. xiv, p. 252 (1879); Nicholson, Ibis 1883, p. 90; Büttikofer, Notes Leyden Mus. ix, p. 78 (1887); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 414, no. 430 (1889); Grant, Cat. Bird Brit. Mus. xxii, p. 225 (1893); Salvad. Bull. Mus. Zool. Turin, xi, p. 12 (1906).

Cryptonyx roulroul, Snelleman, Mid. Sumatra Exped. Vogels, p. 46 (1884).

a-c. 2♂, 1♀. Pasir Ganting, West Sumatran Coast, Lat. 2° S. June 21st, 1914. [Nos. 2061-3.]

"Male, iris hazel, orbits and skin behind eye crimson, anterior parts of upper mandible black, remainder of bill and feet coral, claws dark.

Female similar, but with the bill entirely black, only tinged with red at the base."



MENES PRESS, WATFORD

ACOMUS INORNATUS. Salvad. 1. ♂ 2. ♀

Though both Klaesi and the Mid-Sumatran Expedition seem to have come across this bird in the Padang Highlands we did not meet with it in the Korinchi country and it is said not to occur there. In the Malay Peninsula it is found at over 4,000 feet. In the coastal lands it was very abundant and is largely trapped for food.

3. *Acomus inornatus*, Salvad. (Pl. IV.)

Acomus inornatus, Salvad. Ann. Mus. Civ. Gen. xiv, p. 250 (1879); id. P. Z. S. 1879, p. 651, pl. xlviii; Buttikofer, Notes Leyden Mus. ix, p. 77 (1887); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 413, no. 424 (1889); Ogilvie Grant, Cat. Birds Brit. Mus. xxii, p. 285 (1893).

a.-i. 7 ♂, 2 ♀. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. 20th March-17th May, 1914. [Nos. 501, 507, 699, 716, 719, 796, 1588, 1613-4.]

j.-m. 2 ♂, 2 ♀. Korinchi Peak, Sumatra, 7,300 feet. 24-26th April, 1914. [Nos. 1100, 1154, 1163, 1179.]

n.-o. 1 ♂, 1 ♀. Barong Bharu, Barisan Range, West Sumatra, Lat. 2° S. 4,000 feet. 5-6th June, 1914. [Nos. 1972, 1974.]

"Male, irides red or orange, orbital skin crimson lake, greenish immediately around the eye, bill greenish horn, feet whitish slate tinged with green."

"Female, irides orange or orange brown, orbital skin crimson, a narrow ring round the eye greenish, a lemon yellow square spot at posterior angle of the eye, bill greenish horn, feet pale greenish slate."

At Sungei Kumbang and throughout the flat land to the foot of the actual peak and for some distance up it, this pheasant was fairly common, being found usually in pairs. It was very shy and ran with great rapidity through the undergrowth at the least alarm, the females, according to our Dyaks, being much warier and harder to obtain than the male. The acquisition of this sex which, not having been hitherto obtained, is described below, proves that Beccari and Salvadori were right in stating that the female is a reddish brown bird and that Ogilvie Grant (*loc. cit.*) was in error in considering their supposition to refer to the female of *Lophura rufa*.

Adult female. Feathers of the head, which are somewhat elongated, dark chestnut obscurely barred with black. Feathers of the whole of the upper and lower surface except the primary coverts, primaries and tail feathers, buffy brown inclining to ochraceous on the upper surface, obscurely vermiculated with black, the shaft region only unmarked, each feather broadly edged, but not tipped with clear reddish chestnut, producing a streaked appearance: back and rump with the chestnut colour

prevailing, middle of the belly and flanks more ochreous. Primaries, primary coverts and secondaries, chestnut, vermiculated with black on their outer webs, the inner webs largely black. Quill lining oily fuscous, lesser under wing coverts chestnut, vermiculated with black, greater under wing coverts as the quill lining. Thighs chestnut, vermiculated with black, the shaft region more ochreous. Tail feathers blackish brown. Throat dirty white, the feathers tipped and edged with yellowish, ear coverts dark brown, tipped with chestnut and with light shaft-stripes.

The series of five females, all apparently adult, varies considerably, especially in the under surface. In three specimens the yellowish-ochre centres to the feathers are much more developed with less black vermiculation and with narrower chestnut edges, producing a mucronate, rather than a striped effect. In all, the spurs are represented by small tubercles, fairly sharp in one specimen.

Dimensions (3 spm.) Total length, 470-482; wing 208-228; tail, 145-150; tarsus 65-69; bill from gape, 31-37 mm. (measured in the flesh).

The series of ten males is also composed of adult specimens and is very uniform, the only variation consisting in the tint of the shining tips to the wing coverts, which in some specimens is more greenish and less purplish blue than in others.

The measurements of seven specimens taken in the flesh are as follows:—total length, 458-538; wing 213-227; tail, 152-170; tarsus, 69-77; bill from gape, 31-36 mm., which accord well with those given by Salvadori for the type.

4. *Chalcurus chalcurus* (Less.).

Chalcurus chalcurus (Less.); Elliot, Mon. Phas. i, pl. 10 (1872); Nicholson, Ibis, 1883, p. 255; Buttkofer, Notes Leyden Mus. ix, p. 77 (1887); Grant, Cat. Birds Brit. Mus. xx, p. 362 (1893).

Chalcurus ino-cellatus, Salvad. Ann. Mus. Civ. Gen. xiv, p. 248 (1879); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 413, no. 422 (1889).

a-d. 2 ♂ ad., 1 ♂ imm. 1 ♀. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 15-17th March, 1914. [Nos. 116, 165, 179, 190.]

e-h. 2 ♂, 2 ♀. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. 1st April-15th May, 1914. [Nos. 540, 1583-5.]

i. 1 ♀. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 3rd June, 1914. [No. 1853.]

“Iris hazel, bill greenish or slaty horn, feet slate grey.”

Apparently widely but not numerously distributed in any one area up to about 5,000 feet, as no more were obtained after

the first two or three days' collecting in a station. One or two were trapped but were always so damaged as to be useless and the natives brought us in a few specimens at Siolak Daras. An exceedingly shy and silent bird, scuttling into cover at the least alarm and never taking to flight if possible, like its congener in the Malay Peninsula.

It is curious that throughout the Korinchi Valley the Argus Pheasant does not occur, its characteristic cry being never once heard; while the natives, though it is known to many of them, state that it is never met with. In the Padang highlands and in the coast country to the west of the dividing range on the other hand it is apparently common.

There is some uncertainty as to whether the magnificent Peacock Pheasant from the mountains of the Malay Peninsula described as *Chalcurus inopinatus* by Rothschild¹ should be referred to this genus or to *Polyplectrum*. *Chalcurus* is crestless, has the sides of the head feathered, the back and mantle not ocellated, and the tail of sixteen feathers in the male; *Polyplectrum* is crested, has the sides of the face naked and the back ocellated the tail of 20 feathers in the male. *Chalcurus inopinatus* has the feathers of the crown full, but is not, strictly speaking, crested, the sides of the face thinly feathered, the mantle and back ocellated and the tail of twenty feathers (as has been pointed out by Ogilvie Grant.²)

It will be seen that the characters are almost exactly intermediate between the two genera but there is no doubt that when series of a *Polyplectrum*, of *Chalcurus* and of *C. opinatus* are laid out the general facies of the latter is with *Chalcurus* rather than with *Polyplectrum*. Genera in ornithology being so largely a matter of convenience it would appear more reasonable to suppress *Chalcurus* altogether and broaden the characters of *Polyplectrum* to embrace the latter species. To those who object to this the alternative is to create a new genus for the reception of *Chalcurus inopinatus*.

5. *Sphenocercus korthalsi* (Temm.).

Sphenocercus korthalsi (Temm.); Salvad. Ann. Mus. Civ. Gen. xiv, p. 243 (1879); Vorderman Tijds. Nederl. Ind. xlix, p. 412, no. 406 (1889); Salvad. Cat. Birds Brit. Mus. xxi, p. 11 (1893).

a-j. 6 ♂, 5 ♀. Korinchi Peak, 7,300-10,000 feet.
25th April-9th May, 1914. [Nos. 1155-7,
1331-2, 1350-1, 1397-8, 1411, 2089.]

k. 1 ♀. Barong Bharu, Barisan Range, West Sumatra, Lat. 2° S. 11th June, 1914. [No. 1978.]

1. *Chalcurus inopinatus*, Rothschild, Bull. B. O. C. xiii, p. 41 (1903).

2. *Polyplectron inopinatus*, Ogilvie Grant, Journ. Fed. Malay States Mus. iii, p. 55 (1908).

"Male, iris inner ring blue, outer mauve, orbits smalt, bill smalt, bluish horn at tip, feet pinkish maroon, claws bluish horn."

"Female, iris inner ring blue, outer amethyst, bill and orbital skin smalt blue, feet pinkish maroon."

This pigeon takes the place of *Sphenocercus oxyurus* above about 6,000 feet, and is found almost as high as the limit of forest vegetation at 10,000 feet and over. It was met with by us in small parties of four or five birds and not in such large flocks as its congener, but this may be due to the fact that we discovered the feeding trees of the latter species, when the birds of course became more bunched.

Owing probably to the high altitudes at which alone this bird is found the species appears to be decidedly rare in collections and the present series is probably the largest from any one locality that has been examined by any ornithologist.

It is evident that Salvadori is correct in regarding his *S. etorques* as only the sub-adult male, the rufous collar on the foreneck and the strong rufous tinge on the top of the head being only developed in very old specimens. This is correlated with a change in the colour of the under tail coverts, the longest of which are, in fully adult specimens, entirely pale chestnut, while younger birds have them paler cinnamon, with dark green centres to the feathers, which diminish in extent as the bird grows older. The maroon shoulder patch appears at a comparatively early age.

In the female, old birds have the edges of the longer under tail coverts faintly tinged with pale cinnamon, but the centres of the feathers are always broadly olive green.

Ogilvie Grant has described a species from the mountains of the Malay Peninsula as *S. robinsoni*,¹ comparing it with *S. permagnus* from the Liu Chiu Archipelago.

From the material at our disposal, viz., one of the original typical series, a subadult male, three adults and an immature female, it is very doubtful if *S. robinsoni* can be maintained, even as a subspecies, distinct from *S. korthalsi*.

The two adult females only differ from Sumatran specimens by slightly duller colour on the undersurface and by the more elongate and reduced olive green centres to the under tail coverts; the subadult male can be almost perfectly matched by one from Sumatra in a similar stage, the edges of the under tail coverts being slightly more cinnamon. It is doubtful if fully adult specimens of the peninsular form have yet been obtained, but there is little question that when such are available, *S. robinsoni* will have to fall as a distinct species.

There is no difference in size between peninsular and Sumatran birds.

¹ Bull. B.O.C. XIX, p. 12 (1906).

Some Sumatran birds have the forehead slightly tinged with orange but this also occurs in one of a large series from Java and is not sufficient to found a racial distinction upon.

6. *Sphenocercus oxyurus* (Temm.).

Sphenocercus oxyurus (Temm.); Salvad. Ann. Mus. Civ. Gen. xiv, p. 243 (1879); Nicholson, Ibis, 1883, p. 255; Vorderman, Tijds. Nederl. Ind. xlix, p. 412, no. 405 (1889); Salvad. Cat. Birds Brit. Mus. xxi, p. 7 (1893). Richm. Proc. U. S. Nat. Mus. xxvi, p. 488 (1903).

Treron oxyura, Büttikofer, Notes Leyden Mus. ix, p. 75 (1886).

- a. ♂ ad. Sungei Penoh, Korinchi Valley, Sumatra, 2,700 feet. 10th March, 1914. [No. 40.]
- b-l. 6 ♂, 5 ♀. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. 1st-21st April, 1914. [Nos. 550, 570, 573, 612, 773, 856, 961-2, 1004, 1058-9.]
- m-v. 6 ♂, 5 ♀. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 26th May-7th June. [Nos. 1679, 1704, 1811, 1859-60, 1865-6, 1876-9.]
- u. 1 ♂. Pasir Ganting, West Sumatran Coast, Lat. 2° S. June 19th, 1914. [No. 2025.]

"Male, iris, inner ring pale blue, outer orange, bill pale grey at tip, cere, etc. silvery cobalt, orbital skin pale apple green, feet lake, claws horn."

"Female, iris inner ring pale blue, outer mauve, bill tip, whitish horn, base of cere silvery cobalt, orbital skin Nile green, feet deep coral red, claws horn."

This handsome pin-tailed green pigeon occurred sporadically throughout the lower slopes of the Korinchi valley both in secondary jungle and in old forest up to a limit of about 5,000 feet, above which level it was replaced by *S. korthalsi*; at Sungei Kumbang it was extremely common, feeding in very large flocks on lofty fig trees from which it was difficult to bring birds down. Except on these trees in the late afternoon it was not much in evidence. It had two notes, a low, rather musical coo and a harsh, disagreeable chuckle, which was continuously heard while the birds were feeding.

A single specimen was obtained at Pasir Ganting at sea level, so that, like its congeners in the Malay Peninsula, this species performs migrations to the coast though it does not probably reside permanently at low elevations.

The whole series of males are very uniform, differences dependent on age being mainly in the orange pectoral collar and in the grey on the hind neck, which are less developed in younger birds, which also have the under tail coverts paler cinnamon and more mixed with olive green.

The general green tint of the females appears somewhat darker than in the other sex.

7. *Osmotreron vernans* (Linn.).

Osmotreron vernans (Linn.); Salvad. Ann. Mus. Civ. Gen. xiv, p. 242 (1879); Vorderman, Tijds. Nederl. Ind. xlix, p. 412, no. 407 (1889); Salvad. Ann. Mus. Civ. Gen. (2) xii, p. 73 (1891); id. Cat. Birds Brit. Mus. xxi, p. 60 (1893); Parrot, Abh. Konig. Bayer. Akad. der Wissensch. II, Kl. xxiv, Bd. I, p. 263 (1907); Salvad. Bull. Mus. Zool. Turin, xi, p. 12 (1896); Stuart Baker, Indian Pigeons and Doves, p. 59 (1913.)

Treron vernans, Snelleman, Sumatra Exped. Vogels, p. 47 (1884); Büttikofer, Notes Leyden Mus. ix, p. 75 (1887).

- a. ♀ ad. Sungei Penoh; Korinchi Valley, Sumatra, 2,600 feet. 10th March, 1914. [No. 36.]
 b-f. 3 ♂ ad., 1 ♂ imm., 1 ♀ ad. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 24th May-8th June, 1914. Nos. 1637, 1652, 1692, 1867, 1889.]
 g-i. 2 ♂ ad., 1 ♂ imm. Pasir Ganting, Coast of West Sumatra. Lat. 2° S. 16-19th June, 1914. [Nos. 2013, 2026, 2044.]

"Male, iris outer ring blue, inner ring mauve, pink, or amethyst, bill, pale bluish slate, the cere sage green, feet coral pink or maroon pink.

Female, iris outer ring orange, inner ring blue, bill pale slate, cere olive green, feet pinky lake, claws horn."

Young birds have the iris partially yellow, with the colour of the feet duller and more purplish.

This species was fairly common on the valley floor of Korinchi and on the coast, in situations similar to those affected in the Malay Peninsula, viz., in cultivated land, in secondary jungle and on the edges of rice fields.

The Sumatran birds differ in no way, either in colouration or dimensions, from those inhabiting the Malay Peninsula. Wing about 141 mm.

8. *Ptilinopus roseicollis* (G. R. Gr.).

Ptilopus porphyreus (Reinw.); Elliot, P. Z. S. 1878, p. 553; Salvad, op. cit. 1879, p. 64.

Ptilopus roseicollis, Salvad. Ann. Mus. Civ. Gen. xiv, p. 245 (1879); Vorderman, Nat. Tij. Nederl. Ind. xlix, pp. 411, no. 411 (1889); Salvad. Cat. Birds Brit. Mus. xxi, p. 75 (1893).

- a-d. 2 ♂ ad., 1 ♂ imm. 1 ♀ ad. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. 13th April-18th May, 1914. [Nos. 872, 1018, 1589, 2090.]
 e-u. 11 ♂ ad. 5 ♀ ad., 1 ♀ imm. Korinchi Peak, Sumatra, 7,300 feet. 26th April-15th May, 1914. [Nos. 1186, 1213, 1216, 1226, 1241-2, 1253, 1321, 1325-6, 1410, 1538, 1540-1, 1551-3.]

"Irides orange, or red whitish or hazel in young birds, bill sage green, tarsi and toes coral pink, claws dark."

This beautiful fruit-dove was fairly common in the neighbourhood of Sungei Kumbang, below which it did not occur, but was much more abundant in the vicinity of the lower camp on the Peak itself, at 7,000 feet, though it was not met with much above this limit. Like others of the genus it is a silent and somewhat sluggish bird, met with in pairs or small parties of three or four on high trees, amongst the foliage of which it was very difficult to discern.

Sexual differences exist but adult females are difficult to separate from somewhat younger males. The white thoracic band is not so broad or well defined in females as in adult males, and the succeeding dark band is more greenish and less black, while the grey on the abdomen is less extensive.

The rose colour of the throat, breast and head is less pure, most of the feathers having green edges, while nearly all adult males have the pink of the hind-neck separated from the green of the mantle by a narrow whitish pink line, which is not present in females, though this feature is not absolutely constant.

Young birds are entirely green above, the feathers of the abdomen, the wing coverts and the secondaries being tipped and edged with primrose yellow, these markings being retained until after the rose pink of the breast and head has begun to make its appearance.

We can detect no differences between Sumatran and West Javan birds, the latter place being the typical locality.

9. *Carpophaga badia* (Raffles).

Carpophaga badia (Raffles); Salvad. Ann. Mus. Civ. Gen. xii, p. 246 (1879); Vorderman, Tijds. Nederl. Ind. xlix, p. 412, no. 413 (1889); Salvad. op. cit. (2) xii, p. 73 (1891); id. Cat. Birds Brit. Mus. xxi, p. 218 (1893); Parrot, tom. cit. p. 267 (1907).

a-c. 1 ♂, 2 ♀. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. 5-16th April, 1914. [Nos. 672, 871, 945.]

d. 1 ♂. Korinchi Peak, Sumatra, 7,300 feet. 30th April, 1914. [No. 1292.]

"Iris white, orbital skin crimson lake, bill and cere pinkish maroon, tip whitish horn, feet pinkish claret, claws horn."

Fairly common in deep jungle from about 4,000 feet up to the limit of vegetation, its deep booming note being often heard.

Comparison of the above four specimens with a series of nine from various parts of the Malay Peninsula show that the majority of the latter differ in having the pileum and sides of

the head of a somewhat darker grey. Two specimens however, from Gunong Mengkuang Lebah, Selangor, shot in February, agree with the Sumatran skins in this respect and it is therefore not advisable to separate the Malayan from the typical Sumatran form on this character.

The wing of the four Sumatran specimens, which are all adult, ranges from 213-246 mm., while those of the peninsular specimens vary from 219-244, indicating that the size is identical.

10. *Macropygia leptogrammica* (Temm.).

Macropygia leptogrammica (Temm.); Salvad. Ann. Mus. Civ. Gen. xiv, p. 247 (1872); Buttikofer, Notes Leyden Mus. ix, p. 76 (1887); Vorderman, Nat. Tijds. Nederl. Ind. xlix, p. 413, no. 419 (1889); Salvad. Cat. Birds Brit. Mus. xxi, p. 340 (1893). Stuart Baker, Indian Pigeons and Doves, p. 240 (1913).

a-f. 4 ♂ ad. 1 ♀ ad. 1 ♂ imm. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 15-24th March, 1914. [Nos. 127, 143, 146, 283, 306, 391.]

g-i. 2 ♂ ad., 1 ♂ imm. 1 ♀ ad. 1 ♂ imm. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. 18th April-16th May, 1914. [Nos. 1008-10, 1555-6.]

k-n. 3 ♂ ad., 1 ♀ ad. Korinchi Peak, Sumatra, 7,300 feet. 29th April-15th May, 1914. [Nos. 1248, 1318, 1539, 1550.]

o. 1 ♂ ad. Korinchi Peak, Sumatra, 9,000 feet. 10th May, 1914. [No. 1427.]

"Male, iris inner ring white succeeded by a median blue and an outer heliotrope ring, orbital skin crimson, bill lead black, feet pinkish maroon."

Female, iris amethyst, bill dark purplish brown, feet maroon."

"Younger birds have the iris dark or hazel, the bill horn and the feet brownish, only the fully adult birds have the crimson orbital skin."

Round Siolak Daras on the valley floor this species was fairly common in secondary jungle and at the edges of clearings in wet situations. At Sungei Kumbang in the middle of May it was exceedingly common, feeding along the edges of swampy patches by the stream side in large flocks up to thirty or forty individuals. Further up the mountain it was scarcer but occurred, though in diminished numbers, as high as the tree limit.

Like other members of the genus the plumage changes through which this species passes are very complicated.

In very old birds the black bars on the sides of the breast tend to disappear altogether, leaving the undersurface almost entirely uniform, the under tail coverts pale buff, and with practically no stain of chestnut on the basal part of the outer tail feathers. The forehead and crown is pale hoary buff, unbarred.

Younger birds have the sides of the breast much barred and the base of the throat and sides of the head barred black and buff, the middle of the abdomen is more buffy and the under tail coverts deeper buff. The bases of the outer tail feathers are largely chestnut and the top of the head is barred transversely with chestnut and black.

Still younger males resemble these, but the undersurface is still more barred, some of the feathers being rich chestnut, as are also the under tail coverts. There is no grey whatever on the inferior aspect of the tail, which is barred chestnut and black and there is little amethystine gloss on the hind neck.

Adult females have the undersurface, including the under tail coverts with regular transverse bars of black and buff; the upper surface is also regularly barred with a strong greenish gloss on the hind neck.

Young females lack the greenish gloss, have the under tail coverts uniform chestnut as in the young male and are much suffused with rufous chestnut beneath.

In very old females, the tail tends to become like that of the adult male and the bars on the crown become obsolete, leaving the crown uniform dark greyish, paler at the nostrils but never apparently pale hoary buff as in the fully adult male.

We have compared the above series with an adult male and two adult females from the mountains of the Malay Peninsula and can detect no material differences; in all the cross bars on the tail are more or less broken at the shaft. The ground colour above is perhaps rather darker in the peninsular specimens and the cross barring on the mantle more maroon and less chestnut in colour and decidedly narrower, but these differences are probably only individual.

11. *Macropygia ruficeps* subsp. *nana*, Stresemann.

Macropygia ruficeps (Temm.); Salvad. Ann. Mus. Civ. Gen. xiv, p. 248 (1879); Buttkofer Notes Leyden Mus. ix, p. 76 (1887); Vordermann, Nat. Tijd. Nederl. Ind. xlix, p. 413, no. 420 (1889); Wardl-Rams. Ibis, 1890, p. 225; Salvad. Ann. Mus. Civ. Gen. (2) xii, p. 74 (1891); id. Cat. Birds Brit. Mus. xxi, p. 360 (1893); Stuart Baker, Indian Pigeons and Doves, pp. 247-251 (1913).

Macropygia assimilis, Finsch (nec Hume) Notes Leyden Mus. xxvi, p. 137 (1905).

Macropygia ruficeps nana, Stresemann, Nov. Zool. xx, p. 311 (1913).

- a-h. 3 ♂ ad., 1 ♂ imm. 3 ♀ ad., 1 ♀ imm. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 11-24th March, 1914. [Nos. 108, 118, 128, 144, 229, 354, 390, 1609.]
- i-j. 1 ♂ ad., 1 ♀. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. 8-18th April, 1914. [Nos. 735, 985.]
- k. 1 ♂ ad. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. May 24th, 1914. [No. 1636.]
- l-m. 2 ♂ ad. Barong Bharu, Barisan Range, West Sumatra, 4,000 feet. Lat. 2° S. 9-10th June, 1914. [Nos. 1900, 1927.]

Iris white, bill pinkish horn, feet maroon brown.

Common in swampy situations on the edge of jungle in the Korinchi Valley and also in jungle clearings in the hills, but not apparently ascending above 5,000 feet and not congregating in so large flocks as *M. leptogrammica*.

A comparison of five adult males in the above series with ten equally adult specimens from various parts of the Malay Peninsula shows that the two series differ considerably *inter se*. The Sumatran birds are considerably darker on the breast, the lateral black spots on the feathers being much more in evidence and the white tips much less conspicuous than is the case with the peninsular birds. On the upper surface the Peninsular birds are much more uniform brown on the mantle, the edgings to the feathers not being conspicuously lighter than the rest as is the case with the Sumatran bird, while the metallic gloss on the nape in the island form is greenish, showing as a distinct bar on the feather, while in the Malayan bird it is a generally distributed amethystine gloss.

Stresemann, in his careful review of the species, has grouped the birds from the Malay Peninsula, Sumatra and Borneo as one subspecies. The present material does not bear out his conclusions and though for the present we have followed him we think that it is more probable that birds from West Sumatra are identical with the typical Javan form, while the peninsular birds are either identical with *M. ruficeps assimilis*, Hume, from Tenasserim, or are to be regarded as yet another subspecies. It is at anyrate certain that the two series now before us cannot be referred to the same form. The dimensions of the series afford no assistance. The average of the five Sumatran birds is 143.2, while those of the adult males from the Malay Peninsula is 141.1, figures in both cases slightly higher than those of Stresemann, which is due to the fact that he has probably included birds of both sexes and of various ages in his series.

12. *Streptopelia suratensis* subsp. *tigrina* (Temm. & Knip).

Spilopelia tigrina (Temm. & Knip); Salvad. Ann. Mus. Civ. Gen. xii, p. 246 (1879); Vorderman, Tijds. Nederl. Ind. xlix, p. 413, no. 416 (1889); Buttkofer, Notes Leyden Mus. ix, p. 76; Salvad. Ann. Mus. Civ. Gen. (2) xii, p. 74 (1891).

Turtur tigrinus, Snelleman, Sumatra Exped. Vogels, p. 48 (1884); Salvad. Cat. Birds Brit. Mus. xxi, p. 440 (1893); id. Bull. Mus. Zool. Turin, xi, p. 12 (1896); Parrot, op. cit. p. 273.

Streptopelia suratensis tigrina, Stuart Baker, Indian Pigeons & Doves, p. 210, pl. 21 (1913).

a-b. 1 ♂, 1 ♂-imm. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 14-20th March. Nos. 115, 277.

c-e. 2 ♂, 1 ♀. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 26th May-8th June, 1914. Nos. 1683, 1836, 1891.

"Iris pinkish orange, bill black, feet maroon pink."

Parrot (op. cit. p. 275) has separated the form from the mainland of Asia, including apparently the birds inhabiting Eastern Sumatra, from the typical race from Java under the name *Turtur tigrinus minor*, relying largely on the smaller size of the continental form, which has already been remarked on by other authors. No specific type is mentioned by Parrot but the wing of his Sumatran specimens range from 135 to 138.5 and of his Javan birds from 140 to 144 mm.

Specimens from the whole of the Malay Peninsula range from about 136 to 143 mm. and the four adult specimens from West Sumatra listed above from 145 to 158 measured in the flesh, so that they would appear to belong to the same race as the Javan form, if distinct.

Stuart Baker (loc. cit. p. 211), states that he is unable to separate the two races on the material in the British Museum, though the Sunda Island birds from Java, Lombok and Timor average larger, viz. 150 mm., though his measurements are apparently copied from Salvadori.

It is obvious that on the strength of the dimensions quoted the West Sumatran specimens must be regarded as belonging to the same race as the Javan form and not to the continental form, to which Parrot's specimens from East Sumatra are affiliated and in this connection the colour of the iris should be noted. In specimens from Sumbawa it is noted as "pale bright yellow (Guillemard); in specimens from Burma as "reddish" (Oates); from Java as "reddish pearl" (Wallace), from West Sumatra "pale orange" (Klaesi), almost the same colour as noted by ourselves, viz., "pinkish orange," that is to say the irides of the Sumatran specimens are intermediate in colour between those from the extreme eastern and western ranges of the species, therein agreeing with their

geographical location. No tangible differences in colour are presented. Common along the roads and in open waste and fallow land in the Korinchi valley and in the coastal zone.

13. *Chalcophaps indica* (Linn.).

Chalcophaps indica (Linn.); Salvad. Ann. Mus. Civ. Gen. xii, p. 248 (1879); Vorderman, Tijd. Nederl. Ind. xlix, p. 413, no. 421 (1889); Salvad. Cat. Birds Brit. Mus. xxi, p. 514 (1893); id. Bull. Mus. Zool. Turin, xi, p. 12 (1896); Parrot, op. cit. p. 271 (1907).

- a. 1 ♂ imm. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. May, 1914. [No. 1577.]

Evidently uncommon as only this one specimen was obtained in the course of the expedition.

14. *Scolopax saturata*, Horsf.

Scolopax saturata, Horsf., Trans. Linn. Soc. xiii, p. 191 (1821); id. Zool. Res. Java, pl. 63 (1824); Vorderman, Nat. Tijd. Nederl. Ind. xlv, p. 107 (1885); Seebohm, Ibis, 1886, p. 127; id. op. cit. 1887, pp. 283-5; Salvad. Ibis, 1889, pp. 108-112; Sharpe, Cat. Birds Brit. Mus. xxiv, p. 678 (1896); Rothschild Bull. Brit. Orn. Club, xxxvi, pp. 66, 86-87.

- a. 1 ♂. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. 3rd April, 1914. [No. 618.]
 b. 1 ♂. Korinchi Peak, Sumatra, 10,000 feet. 6th May, 1914. [No. 1396.]
 c. 1 ♀. Korinchi Peak, Sumatra, 7,300 feet. 15th May, 1914. [No. 1554.]

a. "Iris dark, bill lavender brown, the tip pale, feet similar."

b. "Iris hazel, bill purplish horn, feet slate."

c. "Iris hazel, bill horn, pale at tip, feet grey."

All three specimens seem fairly adult and agree well with Sharpe's description (*loc. cit.*) except that the wing coverts are black, or brownish black, with a broad subterminal bar of rufous brown, with, in some cases, small rufous brown spots on the edges. The female is more washed with rufous, both above and below and the black bases to the feathers of the throat are less pronounced. The feathers of the forehead up to the level of the eyes are black, with broad sandy rufous tips, producing a barred effect. The white on the breast is more conspicuous in the males than in the female.

The occurrence of this rare Woodcock on Gunong Korinchi, though not altogether unexpected, is an interesting extension in range for a very widely distributed, though everywhere extremely rare, species.

If Seebohm and Sharpe are correct in regarding *Sc. rosenbergi*, Schlegel, as identical with the Javan bird, the range

extends from the mountains of British New Guinea, where it was obtained by Giulianetti, Sir William Macgregor's Collector, through the Arfak mountains, in the N. W. of New Guinea and thence to East and West Java and to Sumatra. On the other hand Salvadori and Rothschild regard the New Guinea Bird as distinct.

There are in any event enormous gaps in the distribution as ascertained at present for the species is not known to occur in the mountains of Central Dutch New Guinea, nor in the lesser Sunda islands or Sumba, though the intervening island of Obi Major is inhabited by a somewhat allied form, *Neoscolopax rochusseni*. The bird, however, is so retiring in its habits and lives in such difficult country that it is not improbable that several of the intervening peaks of sufficient elevation will ultimately be found to harbour it, notably some of the Timor Volcanoes, which attain a height of nearly 10,000 feet.

Of these three specimens, the first was shot by one of our Dyaks in a patch of swampy forest near our lower camp, the second was obtained in a brake of tangled bracken on a ridge near the forest limit and the third was knocked over with a stick by a Korinchi cooly. This bird was accompanied by two or three chicks which were not obtained.

The measurements of the three specimens, taken in the flesh, were as follows :

	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>
	♂	♂	♀	♀	♀
	mm.	mm.	mm.	mm.	mm.
Total length	.. 282	282	296	310	314
Wing ..	.. 154	155	150	161	151
Tail ..	.. 63	57	60	67	57
Tarsus. ..	.. 33.5	32	36	35	36
Bill from gape	.. 64	63	68	74	71

Specimens *d* and *e* recently collected on the Gedeh, Western Java, and therefore typical *S. saturata*, agree fairly well with the Sumatran birds though the bill is somewhat longer while the white in the centre of the abdomen is more extensive. The differences, however, are not sufficient to justify the separation of the Sumatran form in the absence of really large series.

15. *Rhyacophilus glareola* (Gm.).

Totanus glareola, Gm.; Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 416, no. 446 (1889).

Rhyacophilus glareola (Gm.); Sharpe, Cat. Birds Brit. Mus. xxiv, p. 491 (1896).

a. 1 ♀. Sungei Penoh, Korinchi Valley, Sumatra,
2,600 feet. 11th March, 1914 [No. 61.]

"Iris dark, bill black, brownish at base, feet yellowish olive."

Fairly common during the earlier months of our visit in the rice fields and waste spaces by the water courses.

16. Hypotaenidia striata (Linn.).

Hypotaenidia striata (Linn.); Snelleman in Veth's Midden-Sumatra Exped., Vogels iv, p. 50 (1886); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 416, no. 453 (1889); Nicholson, Ibis, 1883, p. 257; Salvad. Ann. Mus. Civ. Gen. (2) xii, p. 76 (1891); Sharpe, Cat. Birds Brit. Mus. xxiii, p. 33 (1894).

Rallus gularis, Horsf. Trans. Linn. Soc. xiii, p. 196 (1821); Raffles, tom. cit. p. 328 (1822).

a-c. 3 ♂. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 16-28th March, 1914. [Nos. 188-9, 498.]

"Iris chocolate, bill pinkish red at base, slate on culmen and at tip, feet purplish lead."

Fairly common at Siolak Daras.

17. Poliolimnas cinereus (Vieill.).

Ortygometra cinerea, Buttkofer, Notes Leyden Mus. ix, p. 80 (1887); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 416, no. 456 (1889); Salvad. Ann. Mus. Civ. Gen. (2) xii, p. 76 (1891).

Poliolimnas cinereus, Sharpe, Cat. Birds Brit. Mus. xxiii, p. 130 (1894).

a-c. 1 ♂, 1 ♀, 1 ♀ imm. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 28-29th May, 1914. [Nos. 1726, 1727, 1750.]

"Adult, iris and eyelid red, bill yellowish horn, brownish on culmen, reddish at base, feet pale yellowish brown: Immature, iris brown, eyelid crimson, bill brown, yellowish on lower mandible, tarsi light greenish brown tinged with yellow."

Common along the swampy northern shores of the Korinchi Lake.

18. Limnobaenus fuscus (Linn.).

Rallina fusca, Snelleman in Veth's Midden-Sumatra Exped. Vogels, iv, p. 50 (1886); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 416, no. 455 (1889).

Limnobaenus fuscus, Sharpe, Cat. Birds Brit. Mus. xxiii, p. 146 (1894).

a-c. ♂ ♀ pull. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 14-18th March, 1914. [Nos. 110, 111, 216.]

d. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 29th March, 1914. [No. 1751.]

"Adult, iris and orbital ring carmine, bill greenish blue, black on culmen and at base, feet coral pink; Immature, iris brown, bill lead tinged with green, feet reddish brown."

Fairly common in the rice fields.

A chick in down is glossy black, the iris and feet black, the bill pale pinkish.

19. *Amaurornis phoenicura* subsp. *javanica* (Horsf.).

Gallinula javanica, Horsf. Trans. Linn. Soc. xiii, p. 196 (1822).

Rallus sumatranus, Raffles, Trans. Linn. Soc. xiii, p. 328 (1822).

Erythra phoenicura, Salvad. Ann. Mus. Civ. Gen. xiv, p. 253 (1879); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 416, no. 457 (1889).

Gallinula phoenicura, Snelleman in Veth's Midden-Sumatra Exped. Vogels, iv, p. 50 (1886).

Amaurornis phoenicura (Forst.); Sharpe, Cat. Birds Brit. Mus. xxiii, p. 156 (1894).

Amaurornis phoenicura javanica, Stresemann, Nov. Zool. xx, p. 303 (1913).

a-c. 1 ♂, 2 ♀. Sungei Penoh, Korinchi Valley, Sumatra, 2,700 feet. 9-12th March, 1914. [Nos. 7, 37, 67.]

d-e. 1 ♂, 1 ♀. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 17-18th March, 1914. [Nos. 197, 218.]

f-l. 2 ♂, 3 ♀, 1 ♂ imm., 1 ♀ imm. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 27th May-2nd June, 1914. [Nos. 1690, 1722, 1728, 1749, 1844-6.]

"Adult, iris carmine, bill dark sage green, blackish brown on the culmen and shield, feet yellowish brown; in younger birds the irides are brown."

Very common throughout the Korinchi Valley among the vegetation by the edges of ditches and rivers and on the shores of the lake.

If the present series is laid out against a series of birds from the Malay Peninsula it will at once be noted that the Sumatran birds are very much greyer on the back than the peninsular ones and almost lack the strong bronzy tint on the rump and upper tail coverts of the latter. These differences are noted by Stresemann (*loc. cit.*) and are sufficient to justify his separation of the Indian and Chinese bird as *A. ph. chinensis* (Bodd.) from the Sondaic form, *A. ph. javanica*, apart from the factor of size.

Eleven adults from Sumatra range from 170 to 134 in wing measurement (females being very much smaller), with an average of 144.4, while eight adults from the Malay Peninsula with a range of 170-151 average 160.5 mm. Stresemann's averages for the two subspecies based on large series from the entire range are 149.5 and 163.1 respectively.

The brief diagnosis by Oberholser (Smithsonian Misc. Coll. vol. 60, no. 7, p. 2 (1912)) of his *Amauornis phoenicura cleptea*, from Nias, agrees perfectly with specimens from West Sumatra. The bird is stated to be very much smaller than *Amauornis phoenicura phoenicura*, but no actual dimensions are given.

20. *Gallinula chloropus* subsp. *orientalis*, Horsf.

Gallinula orientalis, Horsf. Trans. Zool. Soc. xiii, p. 195 (1820) (Java); Raffles, tom. cit. p. 329 (Sumatra); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 416, no. 458 (1889).

Gallinula chloropus, Linn.; Sharpe, Cat. Birds Brit. Mus. xxiii, pp. 169-173 (1894).

a-b. ♂, ♀ ad. Sungei Penoh, Korinchi Valley, Sumatra, 2,700 feet. 22nd May, 1914. [Nos. 1615-6.]

c-o. 7 ♂ ad. 2 ♀ ad. 4 ♀ imm. Sandaran Agong, Korinchi Lake, Sumatra, 2,450 feet. 28-30th May, 1914. [Nos. 1731-5, 1753-7, 1782, 2091-2.]

"Adult, iris red, bill yellowish green at tip, basal half and shield dull red, tarsi and toes apple green, bluish at joints, a garter of orange red above the tibio-tarsal joint. Immature, iris greyish brown, bill sage green, browner on culmen and shield, tarsi and toes yellowish green, greener at joints."

Fairly common in the lower part of the Korinchi Valley and along the shores of the lake.

The Eastern tropical race of the Moorhen, first named by Horsfield, is so much and so consistently smaller than the European form that it has excellent claims to be regarded as a subspecies. Males in the present series average about 153 mm. and females about 149 in wing measurement, while that of a European male is given by Sharpe as 7.3 in. (186 mm.). The majority of the specimens have the under tail coverts more or less tinged with buffy as in the reputed Madagascar form *G. pyrrhochroa*, Newton, but some have them pure white. The form of the frontal shield differs also in the sexes, that of the male being broader and more globose in outline and that of the female narrower and more parallel-sided, but the differences are not constant.

21. *Porphyrio calvus*, Vieill.

Porphyrio indicus, Horsf.; Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 416, p. 460 (1889).

Porphyrio calvus, Sharpe, Cat. Birds Brit. Mus. xxiii, p. 200 (1894); Van Oort, Notes Leyden Mus. xxxii, p. 113 (1910).

a-r. 10 ♂, 7 ♀, 1 ♂ imm. Sandaran Agong, Korinchi Lake, Sumatra, 2,450 feet. 28-30th May, 1914. [Nos. 1736-9, 1761-6, 1785-92.]

"Adult, iris carmine, bill and frontal shield red, base of mandible maroon, tarsi and toes reddish pink, joints powdery black; Immature, iris greyish brown, bill blackish, blotched with red, feet and toes reddish pink, powdery black on joints."

Along with *Anas superciliosa* and *Gallinula orientalis*, this Purple Coot was exceedingly common among the reeds and rank vegetation at the northern end of Korinchi Lake, but did not occur at any other locality in the valley itself though according to native informants it was common at various other small crater lakes in the district. Though recorded by Vorderman from Sumatra we have not come across any records of specific localities in the island and it does not appear to have been met with by any recent collectors. From the Toba Lake in the Battak Lands in Central North Sumatra another species, *P. bemmeleni*¹, has been described, which is a race of the Indian *P. poliocephalus*, having the mantle purplish blue and the wings greenish. The present form has the mantle almost black, slightly washed with oily green and the primaries, secondaries and wing coverts black, except the outer series which are blue blackish, the two former washed with indigo on their outer webs. The edges of the frontal shield are raised in adult birds, a character not present in *P. poliocephalus* and inferentially also not in *P. bemmeleni*. Our series has been compared with an adult from W. Java with which they exactly agree.

Of the numerous adult birds collected by us, one has the chin and sides of the head hoary grey, not purplish black as in the other specimens. This character is relied on by Elliot to separate his *P. edwardsi*, of Cochin China and Siam, with which form Hume (Stray Feathers IX, p. 120 (1879) has also associated Malayan birds, but in view of Sharpe's statements (*loc. cit.*) that dark-headed birds are found in the Malay Peninsula the character is evidently of little value and in all probability *P. edwardsi* must fall.

We have before us four specimens from the vicinity of Taiping, Perak, and one from Chainat, N. of Bangkok. These are all more or less grey-headed, one being practically identical with the grey headed specimen from Korinchi mentioned above.

Monsieur Morange, Director of the Botanical Gardens, Saigon, who has kept local birds in captivity, states that while females show no change of colour, males vary considerably throughout the year, the inference being that large series obtained in every month are required before the mainland and insular races of *P. calvus* can be definitely separated. In the absence of typical birds from Cochin China we are unable to arrive at a definite decision.

¹ Buttkofer, Notes Leyden Mus. XI. p. 192 (1889).

22. *Anas superciliosa* (Gm.).

Anas superciliosa (Gm.); Snelleman in Veth's Midden-Sumatra Exped. Vogels, iv, p. 52 (1886); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 419, no. 480 (1889); Salvad. Cat. Birds Brit. Mus. xxvii, p. 206 (1895).

a-d. 1 ♂, 3 ♀. Sungei Penoh, Korinchi Valley, Sumatra, 2,700 feet. 9-11th March, 1914. [Nos. 20, 43, 43a, 58.]

e-k. 5 ♂, 2 ♀. Sandaran Agong, Korinchi Lake, Sumatra, 2,450 feet. 29-30th May, 1914. [Nos. 1767-71, 1783, 1784.]

"Iris chestnut, bill slate, tinged with green, the nail black, tarsi and toes brownish green or greyish brown, the membrane darker."

Fairly common in the neighbourhood of Sungei Penoh, flying over the rice-fields at dusk in small flocks of five or six. Exceedingly common among the reeds and on the marshy ground at the north end of Korinchi Lake; not apparently extending very far up the valley as it was not met with at Siolak Daras.

This Australasian Duck has apparently a wide extension of range along the chain of the Sunda Islands as it has been met with in crater lakes of Sumba, Sumbawa, Lombok and Java. The only other record from Sumatra is the lake of Alahan Panjang in the Padang Highlands, situated at over 4,000 feet, where it was obtained by the Mid-Sumatran Expedition. This is its farthest westward and northern extension.

The series is very uniform, males and females are practically identical, the female being slightly smaller. Males have the wing about 255 mm. and females about 10 mm. less.

23. *Dendrocygna javanica* (Horsf.).

Dendrocygna arcuata, Snelleman (nec. Cuv.) in Veth's Midden-Sumatra Exped. Vogels iv, p. 52 (1886); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 419, no. 481 (1889).

Dendrocygna javanica (Horsf.); Salvad. Cat. Birds Brit. Mus. xxvii, p. 156 (1895).

a. 1 ♂. Korinchi Lake, Sandaran Agong, Sumatra, 2,450 feet. May 20th, 1914. [No. 1752.]

"Iris dark brown, orbital ring greenish yellow, bill slate grey, tarsi pale slate grey, toes and webs darker."

Said to be very common in the valley at certain times of the year, but not so at the time of our visit.

The true *Dendrocygna arcuata*, which ranges from Fiji as far west as Jaya has been doubtfully recorded from Sumatra, but it is probable that all records of it should be referred to this western race, which has the upper tail coverts partially chestnut and not mingled black and white.

24. *Phoyx purpurea* subsp. *manillensis* (Meyen).

Ardea purpurea (nec. Linn.); Salvad. Ann. Mus. Civ. Gen. xii, p. 253 (1879); Snelleman in Veth's Midden-Sumatra Exped. Vogels iv, p. 51 (1884); Buttikofer, Notes Leyden Mus. ix, p. 80 (1887); Salvad. Ann. Mus. Civ. Gen. (2) xii, p. 76 (1891).

Ardea manillensis, Salvad. Bull. Mus. Zool. Turin xi, p. 14 (1896).

Phoyx manillensis, Sharpe, Cat. Birds Brit. Mus. xxvi, p. 63, Pl. 1 (1898).

a. 1 ♂. Siolak Gedang, Korinchi Valley, Sumatra, 2,800 feet. 21st May, 1894. [No. 1611.]

b-f. 1 ♂, 2, 2 ♂ imm. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 23rd May-3rd June. [Nos. 1617, 1620, 1740, 1758, 1854.]

"Adult, iris orange, orbital skin greenish yellow, upper mandible brownish, lower yellowish, tarsi and toes black in front and above, dull yellow behind and beneath; Immature, iris chrome."

Very common in the Korinchi valley, feeding on river crabs and small fish and not nearly so shy as most of the large species of herons.

These specimens agree well with Sharpe's description of this, the eastern form of the European Purple Heron. The median area of the throat has the chestnut feathers unspotted with black, though two birds have the base of the feathers black.

25. *Mesophoyx intermedia* (Hasselt).

Herodias intermedia, Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 417, no. 466 (1889); Salvad. Bull. Mus. Zool. Turin, xi, p. 14 (1896).

Mesophoyx intermedia (Hasselt); Sharpe, Cat. Birds Brit. Mus. xxvi, p. 85 (1898).

a. ♂ imm. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. May 28th, 1914. [No. 1741.]

"Iris pale yellow, orbits and bill bright yellow, the tip of the upper mandible black, tarsi and toes black."

The only one seen in the valley.

The bird is not in breeding plumage and the dorsal train is not yet developed. The disintegrated feathers on the hind-neck are about 100 mm. long.

26. *Bubulcus coromandus* (Bodd.).

Bubulcus coromandus (Bodd.); Nicholson, Ibis, 1883, p. 257; Buttikofer, Notes Leyd. Mus. ix, p. 81 (1887); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 417, no. 467 (1889);

Salvad. Ann. Mus. Civ. Gen. (2) xii, p. 77 (1891); id. Bull. Mus. Zool. Turin, ix, p. 14 (1896); Sharpe, Cat. Birds Brit. Mus. xxvi, p. 217 (1898).

- a. 1 ♀. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. March 22nd, 1914. [No. 324.]

"Iris whitish yellow, bill and cere pale yellow, tarsi and feet black."

Throughout our stay in Sumatra, including the traverse of the low country, we did not see more than two or three Cattle Egrets all told. Earlier and later in the year, when the rice is being planted, they are said to be very common in Korinchi. The present specimen is in non-breeding plumage.

27. *Ardetta sinensis* (Gm.).

Ardetta sinensis (Gm.); Salvad. Ann. Mus. Civ. Gen. (2) xii, p. 77 (1891); Vorderman, Nat. Tijds. Nederl. Ind. p. 417, no. 470 (1889); Sharpe, Cat. Birds Brit. Mus. xxvi, p. 227 (1898).

- a. ♂. Sandaran Agong, Korinchi Lake, Sumatra, 2,450 feet. 30th May, 1914. [No. 1780.]

"Iris bright yellow, bill brownish horn, pinkish at base, yellowish at tip, tarsi and toes yellowish green, more yellow behind and beneath."

28. *Ardetta cinnamomea* (Gm.).

Ardea cinnamomea, Gm.; Snelleman in Veth's Midden-Sumatra Exped. Vogels iv, p. 51 (1886).

Ardetta cinnamomea (Gm.); Buttkofer, Notes Leyden Mus. ix, p. 81 (1887); Vorderman, Nat. Tijds. Nederl. Ind. xlix, p. 417, no. 471 (1889); Salvad. Ann. Mus. Civ. Gen. (2) xii, p. 77 (1891); Sharpe, Cat. Birds Brit. Mus. xxvi, p. 236 (1898).

- a, b. ♂, ♀. Sandaran Agong, Korinchi Lake, Sumatra, 2,450 feet. 28th May, 1914. [Nos. 1729, 1730.]

"Iris yellow or orange yellow, orbits yellowish green, upper mandible brownish horn, yellow on tomia, lower mandible clearer yellow, tarsi and toes yellowish green, more yellow behind and beneath."

29. *Accipiter virgatus* subsp. *virgatus* (Temm.).

Accipiter rufotibialis, Sharpe, Ibis, 1887, p. 437; id. Ibis, 1889, p. 68, Pl. II; Ogilvie Grant, Ibis, 1896, p. 109; Hartert, Nov. Zool. xvii, p. 210 (1910.)

- a. ♂ ad. Korinchi Peak, Sumatra, 7,300 feet. May 6th. [No. 1375.]
b. ♂ imm. Korinchi Peak, Sumatra, 7,300 feet. April 27th. [No. 1189.]

Adult. "Iris chrome, bill lead, cere greenish, feet lemon yellow."

Immature. "Iris yellow, feet chrome, toes brighter, claws black, bill black, slate at base, cere and gape greenish."

In all, three or four specimens of this little Sparrow Hawk were seen, either in the open torrent-swept gully in the vicinity of our camp or in the heathlike zone above the forest at heights exceeding 10,000 feet where they probably fed on the ouzel so common there.

The adult bird exactly agrees with the description, dimensions and plate of *Accipiter rufotibialis* from Kinabalu as given by Sharpe, *loc. cit. supra* 1889, the under tail coverts being erroneously stated to be chestnut in the original description; and both have the 4th and 5th primaries practically equal, whereas the 4th is decidedly the longest in all specimens of *A. v. gularis* and *A. v. affinis* which we have been able to examine. Grant categorically states that the adult females of *A. v. gularis* are barred up to the throat, whereas all the immature specimens from Malaya in the F.M.S. Museums have these parts distinctly longitudinally striped, thus resembling the Himalayan form, *A. v. affinis*; their dimensions, however, the wing not exceeding 7.7, would place them with *A. v. gularis*, with which Grant (*loc. cit.*) has identified numerous specimens from "Malacca." It should be stated that the majority of our specimens have been obtained on migration mostly on Pulau Jemor, a small island in the middle of the Straits of Malacca and have not improbably come southwards from Burma and Pegu. Given sufficient material it will probably be found that the hawks of this group are divisible into races as follows:—

A. virgatus virgatus, Java, Borneo, Sumatra and Malay Peninsula.

A. virgatus gularis, China and Japan south-westwards through the Philippines and Malay Archipelago to the Malay Peninsula in winter where it meets the succeeding form.

A. virgatus affinis (Hodgs.). Himalayas and Assam south-westwards in winter through Burma as far as Pegu (not reaching the Malay Peninsula) where it meets the preceding form.

A. virgatus besra (Jerd.) South India and Ceylon; Andamans?

A. virgatus confusus Hartert (*A. manilensis* auct., nec. Meyen), Philippines.

It would appear that the forms *A. v. gularis* and *A. v. affinis* are migratory, ranging south in winter, while the others are sedentary. Judging from the dimensions given by Sharpe for birds from Sumatra and Java (Stray Feathers, viii (1879), p. 441), we believe that *A. rufotibialis* is a synonym

of *A. v. virgatus* as stated by Hartert (*loc. cit.*) though very adult specimens we possess from Java have a rather broader throat stripe than the others.

30. *Neopus malayensis* (Reinw.).

Neopus malayensis (Reinw.): Sharpe, Cat. Birds Brit. Mus. i. p. 257 (1874).

Onychaetus malayensis, Vorderman, Nat. Tijds. Nederl. Ind. xlix, p. 386, no. 3 (1889).

a. ad. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet, May, 1914. [No. 1587.]

Shot in heavy forest.

Widely distributed throughout the Indo-Malayan region but everywhere rather rare and difficult to obtain.

***Spizaetus limnaetus* (Horsf.).**

Spizaetus limnaetus (Horsf.); Sharpe, Cat. Birds Brit. Mus. i, p. 272 (1874); Buttikofer, Notes Leyden Mus. ix, p. 10 (1887); Vorderman, Nat. Tijds. Nederl. Ind. xlix, p. 386, no. 15 (1889); Sharpe, Ibis, 1889, p. 70 (N. Borneo); Hartert, Nov. Zool. ix, p. 195 (1902).

Limnaetus caligatus (Raffles); Salvad. Ann. Mus. Civ. Gen. xiv, p. 172 (1879); id. op. cit. (2) xii, p. 41 (1891); id. Bull. Mus. Zool. Turin, xi, p. 2 (1896).

Spizaetus cirrhatus limnaetus, Parrot, Abh. Konigl. Akad. Bayer. (11) xxiv, Bd. i, p. 158, (1907).

Spizaetus cirrhatus caligatus, Parrot, *loc. cit.* p. 160.

a. ♂ Pasir Ganting, West Sumatran Coast, Lat. 2 S. June 18th, 1914. [No. 2017.]

"Iris brown, feet dirty white with a greenish cast, bill black."

Fairly common both in the Korinchi Valley and also on the mountain, though we did not obtain specimens.

There is no doubt whatever that the black form *Sp. limnaetus*, and the white breasted form *Sp. caligatus* are phases of one species though it remains to be proved that all the dark birds are old and all the young ones white-breasted, i.e. the difference being only doubtfully due to age.

In some localities the dark form is decidedly commoner, as in Java, and in other countries, e.g. Peninsular India, the light form is the prevalent one. In the Malay Peninsula they appear to be about equal in numbers.

31. *Spilornis bacha* subsp. *pallidus*, Walden.

Spilornis bacha, Salvad. Ann. Mus. Civ. Gen. xiv, p. 173 (1879); Nicholson, Ibis, 1883, p. 239; Buttikofer, Notes Leyden Mus. ix, p. 8 (1887); Vorderman, Nat. Tijds. Nederl. Ind. xlix, p. 386, no. 7 (1889); Salvad. Bull. Mus. Zool. Turin, xi, p. 2 (1896).

Spilornis pallidus, Walden, Ibis, 1872, p. 363; Sharpe, Cat. Birds Brit. Mus. 1, p. 290, Pl. ix (1874); Robinson & Kloss, Ibis, 1911, p. 23.

- a. ♀ imm. Barong Bharu, Barisan Range, West Sumatra, Lat. 2°S. 4,000 feet. June 8th, 1914. [No. 1973.]

The above specimen is in a very young state of plumage, having the crest and feathers of the upper surface broadly tipped with buffy white. It agrees well with the majority of the serpent eagles found in the Malay Peninsula and in Borneo, being very much lighter in general colour than in the typical form from Java (*Sp. bido*, Horsf.).

32. *Haliastur indus* subsp. *intermedius*, Gurney.

Haliastur intermedius, Gurney, Ibis, 1865, p. 28; Sharpe, Cat. Birds Brit. Mus. 1, p. 31 (1874); Salvad. Ann. Mus. Civ. Gen. xiv, p. 173 (1879); id. op. cit. (2) xii, p. 41; id. Bull. Mus. Zool. Turin, xi, p. 2 (1896).

Haliaetus indus, Snelleman in Veth's Midden-Sumatra Exped. Vogels, iv, p. 45 (1884).

Haliastur indus (nec Bodd.). Buttikofer Notes Leyden Mus. ix, p. 10 (1887); Vorderman Nat. Tijd. Nederl. Ind. xlix, p. 386, no. 12 (1889).

- a. 1 ♂ Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 16th March, 1914. [No. 2092.]
b-c. 1 ♂ 1 ♀ imm. Pasir Ganting, West Sumatran Coast, Lat. 2°S. 18th June. [Nos. 2015, 2018.]

"Adult, iris yellow, bill sea green, cere yellowish, feet pale yellow."

A pair or so were generally to be seen over the rice fields in the Korinchi valley but the species was of course not nearly so common as it was on the coast. That from Korinchi has the black shaft stripes broader than is usual in this subspecies, therein approaching the typical form, *Haliastur indus* (Bodd.) from continental India.

33. *Elanus hypoleucus*, Gould.

Elanus hypoleucus, Gould; Sharpe, Cat. Birds Brit. Mus. 1, p. 338; Salvad. Ann. Mus. Civ. Gen. xiv, p. 173 (1879); id. op. cit. (2) xii, p. 42 (1891). Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 386, no. 13 (1889).

- a. ♂. Sungei Penoh, Korinchi Valley, Sumatra, 2,700 feet. 11th March, 1914. [No. 57.]
b-c. 2 ♂. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 16-18th March, 1914. [Nos. 175, 234.]

d. ♀. Siolak Gedang, Korinchi Valley, Sumatra,
2,800 feet. 21st May, 1914. [No. 1612.]

e. ♀. Sandaran Agong, Korinchi Valley, Sumatra,
2,450 feet. 26th May, 1914. [No. 1678.]

"Iris orange or carmine, bill black, cere and gape pale yellow, feet pale yellow, claws black."

The only raptorial bird that was anything but rare in the Korinchi Valley, where it was fairly abundant, often hovering and gliding at a great height or else perching on tall dead trees. The food appears to consist of frogs, lizards, small birds and large grasshoppers.

Microhierax fringillarius (Drap.).

Microhierax fringillarius (Drap.); Sharpe, Cat. Birds Brit. Mus. i, p. 367 (1874); Salvad. Ann. Mus. Civ. Gen. xiv, p. 172 (1879); Buttikofer, Notes Leyden Mus. ix, p. 7 (1887); id. Bull. Mus. Zool. Turin, xi, p. 2 (1896).

Hierax coerulescens, Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 386, no. 2 (1889).

Microhierax caerulescens fringillarius, Parrot, Abh. Konigl. Akad. Bayer, (11) xxiv, Bd. I, p. 157 (1907).

a. 1 ♀. Pasir Ganting, West Sumatran Coast, Lat.
2°S. June 18th 1914. [No. 2009.]

"Iris brown, bill and feet black."

Not met with in Korinchi itself.

34. Huhua orientalis subsp. sumatrana (Raffles).

Strix sumatrana, Raffles, Trans. Linn. Soc. xiii, p. 279 (1822).

Bubo sumatranus, Salvad. Ann. Mus. Civ. Gen. xiv, p. 175 (1879); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 387, no. 23 (1889).

Bubo orientalis (Horsf.); Sharpe, Cat. Birds Brit. Mus. ii, p. 39 (1875).

Huhua orientalis sumatrana, Hartert, Nov. Zool. ix, pp. 195, 541 (1902); Parrot, Abh. Konigl. Akad. Bayer. II., xxiv, Bd. I, p. 164 (1907); Stone, Proc. Acad. Nat. Sci. Philad. liv, p. 672 (1902).

a-c. 3 ♀. Siolak Daras, Korinchi Valley, Sumatra,
3,000 feet. 14-20th March, 1914. [Nos. 87,
109, 273.]

"Iris dark hazel in two specimens, chrome in a third, bill feet and cere pale yellow, claws greenish lead."

Fairly common in the valley, etc. but not on the hills.

Sumatran and Malayan specimens agree well both in size and colouration. They are said to be smaller and duller in colour than the typical form from Java and we have therefore

followed the majority of recent authors in keeping them distinct, though we have not seen adult specimens from Java.

The wing measurement of the three female Sumatran specimens ranges from 330-357 mm.

35. *Pisorhina solokensis*, Hartert.

Pisorhina solokensis, Hartert, Bull. Brit. Orn. Club, ii, pp. xxxix, xl (1893).

a, b. 2 ♂. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. 10-17th April, 1914. [Nos. 778, 978.]

c, d. 1 ♂, 1 ♀. Korinchi Peak, Sumatra, 7,300 feet. 24-27th April, 1914. [Nos. 1125, 1188.]

"Male, iris yellow, bill pinkish horn, yellowish horn at tip, feet whitish; female, iris chrome, bill bluish horn, yellowish at tip, pinkish at gape, feet pinkish."

Only the four above listed specimens were obtained by our Dyaks who describe it as a silent and sluggish bird, sitting hunched up on branches near the main trunk. The hooting of owls was heard on several nights at Sungei Kumbang, the note resembling that of *P. hantu*, by which species it was probably uttered.

Allowing for the very great individual variation always present in this group of owls, the series listed above agrees sufficiently well with Hartert's description (*loc. cit.*). The occipital spot, nuchal and post cervical band are only fully developed in one male specimen and the latter varies much in distinctness. The tarsi are feathered to the origin of the toes, which are naked.

The species seems to be closely allied to *Scops brookii*, Sharpe, Bull. Brit. Orn. Club, i, p. iv (1893), id. Ibis, 1893, pp. 117, 417, Pl. XI (1893).

From the figure of this species our series appear to differ in the less ferruginous upper surface, more heavily marked with black, the cheeks pale rufous and the cervical collar tinged with buff, not white.

The wing of the type specimen of *S. solokensis*, a male, was 6.7 in. (170 mm.), the three males in our series 167-171 mm., and the female 180, while the wing of the type of *S. brookii*, which was unsexed, was 6.65 in. (168 mm.)

36. *Pisorhina lempiji*, (Horsf.).

Strix lempiji, Horsf. Trans. Linn. Soc. xiii, p. 140 (1821); Raffles, tom. cit. p. 280 (1822).

Scops lempiji (Horsf.); Sharpe Cat. Birds Brit. Mus. ii, p. 91 (1875); Salvad. Ann. Mus. Civ. Gen. xiv, p. 175 (1879); Nicholson, Ibis, 1882, p. 53; Buttikofer, Notes Leyden Mus. ix, p. 11 (1887); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 387, no. 21 (1889); Salvad. Ann. Mus. Civ. Gen. (2) xii, p. 42 (1891).

Pisorhina lempiji, Hartert, Nov. Zool. ix, p. 541 (1902).

a, b. 1♂, 1♀. Sandaran Agong, Korinchi Valley,
Sumatra, 2,450 feet. 26th May, 1914.
[Nos. 1676, 1677.]

"Iris bright yellow, bill greenish horn, pinkish at base, feet whitish."

Slightly darker above and more strongly marked beneath than any of a series of Malayan birds, the majority of which, however, are rather young while these are very fully adult.

The hooting of this owl was often heard on moonlight nights throughout the length of the Korinchi Valley from Siolak Daras to the lake.

37. *Pisorhina luciae* (Sharpe).

Scops luciae, Sharpe, Ibis 1888, p. 478.

Heteroscoops luciae, Sharpe, Ibis, 1889, p. 77, Pl. III (Kinabalu, N. Borneo); id. Ibis 1893, p. 417 (Mt. Dulit, Sarawak).

Pisorhina luciae, Hartert, Nov. Zool. ix, p. 541 (1902) (Gunong Tahan, Malay Peninsula).

Heteroscoops vulpes, Ogilvie Grant, Bull. Brit. Orn. Club, xix, p. 11 (1906); id. Journ. Fed. Malay States Mus. ii, p. 51, Pl. III, fig. 9 (1908). Robinson, Journ. Fed. Malay States Mus. ii, p. 171 (1909); Van Oort, Notes Leyden Mus. xxxiv, p. 60 (1911).

a. ♀ Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. March 18th, 1914. [No. 241.]

"Iris lemon, bill pinkish horn, feet pale pinky white."

This specimen is almost uniform foxy red above with black shaft stripes to the feathers and with small, scattered, irregular spots of buffy white and black. The feathers of the throat have broad, black shaft stripes and the forehead is pale pinky buff.

We have examined over ten specimens of this species, of which five are now before us and there is little doubt that the forms from Borneo, the Malay Peninsula and Sumatra cannot be separated specifically on the material. The series from the Malay Peninsula comprises the darkest and lightest specimens of the whole group as well as those most heavily and most lightly marked. The figure of the female type from Kinabalu can be almost exactly matched by one of the same sex from Mengkuang Lebah, Selangor, 4,800 feet, and we have therefore no alternative but to suppress *H. vulpes*.

As regards the generic name we are in accordance with Dr. Hartert who does not consider that *Heteroscoops*, Sharpe, can be maintained. The hairiness of the facial plumes is a variable character which differs in specimens of the same species in the series before us and is hardly present to a greater degree in *P. luciae* than in *P. rufescens*.

38. *Pisorhina vandewateri*, Robinson & Kloss.

Pisorhina vandewateri, Robinson & Kloss, Journ. Straits Branch Roy. Asiat. Soc. No. 73, p. 275 (1916).

A small owl, with the bill clear yellow, tarsi partially bare for one third their length in front, postcervical collar strongly marked.

General colour above dark chocolate brown mottled and vermiculated as in the genus with fuscous, feathers of the crown with the centres very broadly black, producing almost a striped appearance; a stripe from the nostrils over the eye passing alongside the ear coverts and uniting with the cervical collar mingled buffy and black, more pinkish in the vicinity of the nostrils. Facial plumes and ear coverts mingled buff and black, obscurely toothed with reddish chestnut. A well marked postcervical collar buffy white, formed by a broad median bar of that colour on the feathers. Wing coverts a vermiculated mixture of pinky buff and black, the scapulars with the outer webs broadly white, tinged with buff, forming a conspicuous mark on the wing. Angle of the wing whitish. Primaries fuscous brown, barred and toothed on the outer webs with buffy white, the bars clear and strongly pronounced.

Tail feathers blackish brown with obscure bars of pinkish brown vermiculations. Chin and forethroat whitish, breast barred black, whitish buff and reddish brown, the rest of the undersurface irregularly barred with white, buff, black and pinkish brown and with a general suffusion of golden buff; middle of the abdomen whitish. Thighs mingled pinkish buff and blackish, almost uniform sooty brown at the tibio-tarsal joint.

"Iris yellow, bill corneous, feet pale flesh."

Wing, 142; tail, 79; tarsus, 26; bill from gape, 19 mm.

It is evident that this small owl belongs to the group in which is included *P. luciae* and its local variants in Sumatra and the Malay Peninsula and also *P. rufescens* from the same general region. From the latter it is at once distinguished by its strongly mottled undersurface which in *P. rufescens* is almost uniform with sparsely distributed guttate black spots, which are clearly defined. From *P. luciae* it can be separated by its strongly marked collar and its much darker general tone. The characters of the facial plumes are similar to those of *P. luciae*, of which a series of six from the Malay Peninsula and Sumatra is available for comparison.

A single female was shot by one of our Dyaks in a narrow gully just below our camp on the Peak at 7,300 feet on April 23rd, 1914. [No. 1097.] No others were seen or heard.

39. *Carcineutes pulchellus* (Horsf.)

Carcineutes pulchellus (Horsf.); Nicholson, Ibis, 1883, p. 243; Stone, Proc. Acad. Nat. Sci. Philad. liv, p. 675 (1902); Sharpe, Cat. Birds Brit. Mus. xvii, p. 198 (1892).

Dacelo pulchella, Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 394, no. 115 (1889).

Carcineutes pulchellus pulchellus, Parrot, Abh. Konigl. Akad. Bayer. II, xxiv, Bd. I, p. 210 (1907).

a. 1 ♂. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 18th March, 1914. [No. 235.]

"Iris hazel, bill vermilion, feet pale-dirty orange."

Rare, this being the only specimen seen.

One of the most noticeable features in the Korinchi jungles was the absence of Kingfishers, though there were plenty of streams suitable for them. During our whole stay we only noticed one *Ceyx* and one specimen of *Alcedo bengalensis*, or possibly *A. meninting* near our house at Siolak Daras. No individual of *Halcyon concreta*, which is not dependent on water, or of *Alcedo euryzona*, which is never found far from running water, was even seen by any of our party.

40. *Halcyon chloris* (Bodd.).

Alcedo chloris, Bodd. Tabl. Pl. Enl. p. 49 (1873).

Alcedo chlorocephala, Gm.; Raffles, Trans. Linn. Soc. xiii, p. 293 (1822).

Dacelo chloris, Snelleman in Veth's Midden-Sumatra Exped. Vogels iv, p. 36 (1884).

Sauropatis chloris (Bodd.); Salvad. Ann. Mus. Civ. Gen. xiv, p. 194 (1879); Buttikofer Notes Leyden Mus. ix, p. 38 (1887); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 394, no. 114 (1889); Salvad. Ann. Mus. Civ. Gen. (2) xii, p. 48 (1891).

Halcyon chloris (Bodd.); Sharpe, Cat. Birds Brit. Mus. xvii, p. 273, Pl. VII, fig. 3 (1892); Hartert, Nov. Zool. ix, p. 203 (1902); Parrot, Abh. Konigl. Akad. Bayer. II, xxiv, Bd. I, p. 203 (1907).

Halcyon armstrongi, Salvad. (?) Sharpe, Bull. Mus. Zool. Turin, xi, p. 7 (1896).

a, b. 1 ♂, 1 ♀. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 19th March, 1914. [Nos. 243, 244.]

c-i. 3 ♂ ad., 3 ♀ ad., 1 ♀ imm. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 24th May-3rd June, 1914. [Nos. 1635, 1648-9, 1664, 1745, 1805, 1856.]

"Iris dark, upper mandible black, lower, except tip and tomia, which are black, whitish tinged with pink, feet brownish black."

Singly or occasionally in pairs along the river at the upper end of the valley, more abundant at the lower end on the shores of the lake.

All these specimens except No. 1648 are quite adult as is shown by the absence of black edges to the feathers of the breast. There is no tinge of fawn on the flanks of any and they cannot therefore be referred to the nominal *H. humii*, Sharpe, of the Malay Peninsula, though some of the males have the wings very bright blue as in that form. The ear coverts are in most of the birds nearly black, in some slightly washed with bluish green on the lower margin and the black cervical collar is well marked. Sharpe has recorded both *H. chloris*, *H. humii* and *H. armstrongi* from Acheen from amongst specimens shot in one and the same month by Davison but we do not think that his theory that certain of the races are migratory is borne out by the facts, which are done less violence to by assuming that the species *H. chloris* is very variable in the same district.

41. *Rhytidoceros undulatus* (Shaw).

Rhytidoceros undulatus (Shaw); Salvad. Ann. Mus. Civ. Gen. xii, p. 190 (1879); Buttikofer, Notes Leyden Mus. ix, p. 34 (1887); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 392, no. 95 (1889); Ogilvie Grant, Cat. Birds Brit. Mus. xvii, p. 382 (1892); Salvad. Bull. Mus. Zool. Turin, xi, p. 6 (1896).

a, b. ♂ ♀. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 21st March, 1914. [Nos. 292, 293.]

c, d. 2 ♂. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. April, May, 1914. [Nos. 733, 1586.]

"Male, iris red with a white inner ring, bill ivory white, tinged with reddish at the base, gular skin chrome with a transverse greenish bar."

Female, iris hazel with a white inner ring, bill ivory white tinged with brownish green at base, gular skin, silvery cobalt, with a transverse interrupted black bar."

Fairly common in heavy jungle on Korinchi Peak up to over 6,000 feet and also on the Barisan Range to its summit at nearly 7,000 feet.

The only other large hornbill that we saw was *Rhinoplax vigil*, of which the dried heads command a high price. No *Buceros* were seen.

42. *Anorrhinus galeritus* (Temm.).

Anorrhinus galeritus (Temm.); Salvad. Ann. Mus. Civ. Gen. xiv, p. 189 (1879); Buttikofer, Notes Leyden Mus. ix, p. 35 (1887); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 392,

no. 89 (1889); Ogilvie Grant, Cat. Birds Brit. Mus. xvii, p. 391 (1892); Salvad. Bull. Mus. Zool. Turin, xi, p. 6 (1896).

a-d. 4 ♂. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 21st March, 1914. [Nos. 279-282.]

"Male, iris carmine, bill black, horn at tip, feet greenish slate, orbital skin livid silvery cobalt, gular skin purplish."

Travelling in flocks of considerable size, sometimes of fifteen or twenty individuals and feeding on lower and smaller trees than is usually the case with the larger species.

***Merops viridis*, Linn.**

Merops sumatranus, Raffles; Salvad. Ann. Mus. Civ. Gen. xiv, p. 192 (1879); Nicholson, Ibis, 1882, p. 56; id. op. cit. 1883, p. 243; Buttikofer, Notes Leyden Mus. ix, p. 36 (1887); Sharpe, Cat. Birds Brit. Mus. xvii, p. 61 (1891); Salvad. Bull. Mus. Zool. Turin, xi, p. 6 (1896).

Merops badius, Snelleman in Veth's Midden-Sumatra Exped. Vogels, iv, p. 36 (1884).

Merops bicolor, Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 393, no. 102 (1889).

Merops bicolor sumatranus, Parrot, Abh. Konigl. Akad. Bayer. II, xxiv, Bd. I, p. 198 (1907).

Merops viridis, Linn.; Hartert, Nov. Zool. xvii, p. 482 (1910); Robinson, Journ. Fed. Malay States, Mus. vii, p. 151 (1917).

a-g. 2 ♂ 5 ♀. Pasir Ganting, West Sumatran Coast, Lat. 2° S. 18-20th June, 1914. [Nos. 1995-6, 2038, 2043, 2049, 2056-7.]

"Iris red, bill and feet black."

This species was very common at Pasir Ganting hawking for insects along the shore and river. Curiously enough, with the single exception noted under the following species not a single bee-eater was ever seen in the Korinchi country, though it might have been thought that the valley was eminently suited both for this species and for *M. philippinus*, while in the Malay Peninsula *Nyctiornis amicta* occurs at over 4,000 feet in heavy jungle.

In the face of Dr. Hartert's remarks we have no option but to transfer the name of the common Indian Green Bee-eater to this Indo-Malayan species.

43. *Nyctiornis amicta* (Temm.).

Merops amicta, Temm.; Snelleman in Veth's Midden-Sumatra Exped. Vogels, iv, p. 3 (1884).

Nyctiornis amicta (Temm.); Salvad. Ann. Mus. Civ. Gen. xiv, p. 192 (1879); Nicholson, Ibis, 1882, p. 56; Buttikofer, Notes Leyden Mus. ix, p. 36 (1887); Sharpe, Cat. Birds Brit.

Mus. xvii, p. 90 (1891); Salvad. Bull. Mus. Zool. Turin, xi, p. 6 (1896); Vorderman Nat. Tijd. Nederl. Ind. xlix, p. 393, no. 103 (1889); Parrot, Abh. Königl. Akad. Bayer, II, xxiv, Bd. I, p. 109 (1907).

a. 1 ♂ imm. Pasir Ganting, West Sumatran Coast,
Lat. 2° S. 18th June, 1914. [No. 1997.]

"Iris deep yellow, bill black, whitish at the base of the lower mandible, feet coppery green."

A young bird entirely green above and below with practically no trace of the lilac and vermilion of the head and gorget.

At over 12,000 feet on the final cone of Korinchi Peak, on absolutely bare volcanic scoriae, at some considerable distance from vegetation of any kind we found the recognizable remains of a bird of this species. It had evidently been blown or wandered out of the forest and either died of starvation or been suffocated by the sulphurous fumes.

The species was not met with by us at any of our camps on the southern slope of the mountain and almost certainly does not occur in the Korinchi forests, but has been obtained by several collectors in the Padang Highlands to the northward.

Caprimulgus affinis, Horsf.

Caprimulgus affinis, Horsf; Salvad. Ann. Mus. Civ. Gen. xiv, p. 195 (1879); Vorderman, op. cit. p. 395, no. 129; Hartert, Cat. Birds Brit. Mus. xvi, p. 549 (1892).

Caprimulgus faberi, Meyer, Sitz. Ges. Isis, i., p. 20 (1884); Vorderman, op. cit. p. 396, no. 132.

a-f. 3 ♂, 3 ♀. Pasir Ganting, West Sumatran Coast,
Lat. 2° S. 17-19th June, [Nos. 1981, 1991,
1993-4, 2021-2.]

"Iris dark, bill pinkish horn, feet purplish brown."

Fairly common on the sea shore. Its flight is very direct and rapid and its note, as already observed by Everett (*Nov. Zool.* iii, p. 595, 1896) is very different from other members of the genus, being a shrill squeak.

44. Lyncornis temmincki, Gould.

Lyncornis temmincki, Gould; Salvad. Ann. Mus. Civ. Gen. xiv, p. 195 (1879); id. op. cit. ser. 2a, xii, p. 48 (1891); Vorderman, op. cit. p. 395, no. 128; Hartert, Cat. Birds Brit. Mus. xvi, p. 606 (1892).

a-b. 2 ♀. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 27th May. [Nos. 1705, 1706.]

"Iris dark hazel, bill horn, feet powdery pinky brown."

By no means common in the Korinchi Valley, where it was the only Goatsucker seen or heard.

45. *Tachornis infumata* (Sclat.).

Cypselus infumatus, Sclat., P. Z. S. 1865, p. 602; Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 396 (1889).

Tachornis infumata, Hartert, Cat. Birds Brit. Mus. xvi, p. 467 (1892).

a-d. 4 ♀. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 15-28th March, 1914. [Nos. 152, 456-7, 495.]

"Iris dark, bill black, feet purplish."

Very common on two or three evenings at Siolak Daras, after heavy rain, flying over the river. Not seen at any other place or on any other occasion.

This Palm Swift has hitherto been only doubtfully recorded from Sumatra.

***Hemiprocne longipennis* subsp. *harterti*, Stresemann.**

Hirundo longipennis, Rafin, Bull. Soc. Philomath., iii, p. 153 (1804).

Hirundo klecho, Horsf. Trans. Linn. Soc., xiii, p. 143 (1821).

Cypselus klecho, Snelleman in Veth's Midden-Sumatra Exped. Vogels, iv, p. 38 (1884).

Macropteryx longipennis (Rafin.); Buttikofer, Notes Leyden Mus. ix, p. 39 (1887); Hartert, Cat. Birds Brit. Mus. xvi, p. 514 (1892); Stone, Proc. Acad. Nat. Sci. Philad. liv, p. 677 (1902).

Dendrochelidon longipennis, Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 396, no. 135 (1889).

Hemiprocne longipennis harterti, Stresemann, Nov. Zool. xx, p. 339 (1918).

a. 1 ♂. Pasir Ganting, West Sumatran Coast, Lat. 2° S. 20th June, 1914. [No. 2060.]

"Iris dark, bill black, feet purplish." Wing 165 mm.

Seen once or twice in the Korinchi Valley hawking for insects after heavy rain in the evening but flying too high to be obtained. Not uncommon on the coast.

46. *Collocalia linchi*, Horsf. & Moore.

Collocalia linchi, Horsf. & Moore, Cat. Birds Mus. E. I. C. i, p. 100 (1854); Salvad. Ann. Mus. Civ. Gen. xiv, p. 197 (1879); Hartert, Cat. Birds Brit. Mus. xvi, p. 508 (1898); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 396, no. 138 (1889).

Collocalia linchi linchi, Stresemann, Nov. Zool. xix, p. 347 (1912).

a. ? Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 25th March, 1914. [No. 425.]

Expedition to Korinchi:

- b. 1 ♂. Barong Bharu, Barisan Range, West Sumatra, Lat. 2° S., 4,000 feet. 7th June, 1914.
[No. 2096.]

"Iris dark, bill and feet black."

Fairly common after heavy rain in the Korinchi Valley and also near our camp on the Peak at 7,300 feet. Specimens shot at this locality however were either so damaged as to be useless or fell over the cliff and were not retrieved.

These specimens agree with the typical form from Java in their small size, (wing 88, 90 mm.) and dull colouration, the interscapular region being greyish black, with an oily green gloss. The Malayan form is quite distinct, being much larger (wing up to 106 mm.) and much more brightly coloured, the upper surface being black, with a strong steely blue lustre. It has been described as *Collocalia linchi cyanoptila* by Oberholser (Proc. Acad. Nat. Sci. Philad. lviii, p. 205 (1906)).

***Pyrotrogon duvauceli* (Temm.).**

Trogon kasumba, Raffles (partim.) Trans. Linn. Soc. xiii, p. 283 (1822).

Trogon duvauceli, Temm., Pl. Col., no. 291 (1824); Vigors, Memoirs, p. 672 (1830).

Harpactes duvauceli, Tweed., Ibis, 1877, p. 288; Salvad. Boll. Mus. Zool. Comp. Torino., xi, no. 250, p. 5 (1896).

Pyrotrogon duvauceli, Salvad. Ann. Mus. Civ. Gen. xiv, p. 177 (1879); Hartert, Nov. Zool., ix, p. 200 (1902).

Pyrotrogon duvaucelii duvaucelii, Parrot, Abhandl. K. Bayer. Akad. Wiss. ii, Kl. xxiv, Bd. i, p. 183 (1907).

- a. ♂. Pasir Ganting, Coast of West Sumatra, Lat. 2° S. 21st June. [No. 2074.]

"Iris hazel, bill rich cobalt, culmen black, naked space over eye turquoise blue, feet dull purplish."

The specimen is badly in moult, but appears to have the mantle and median tail feathers more ochreous and less cinnamon brown than a series of males from the Malay Peninsula, with which we have compared it.

47. *Hapalarpactes mackloti* (S. Muell.).

Trogon mackloti, Muell.; Snelleman, Sumatra, Vogels, p. 33 (1884); Buttikofer, Notes Leyden Mus. ix, p. 14 (1887).

Hapalarpactes mackloti, Salvad. Ann. Mus. Civ. Gen. xiv, p. 177 (1879); Salvad. op. cit. ser. 2a xii, p. 44 (1891); Vorderman, op. cit. p. 389, no. 36; Ogilvie Grant, Cat. Birds Brit. Mus. xvii, p. 497 (1892).

- a-h. 4 ♂, 4 ♀. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 22nd-26th March.
[Nos. 315, 331-3, 389, 415, 446, 450.]

q-e'. 4 ♂, 11 ♀. Sungei Kumbang, Korinchi, Sumatra, 4,600 feet. 1st April-12th May. [Nos. 535, 563, 666, 688, 692, 726, 790, 798-9, 801, 939, 992, 1005, 1051, 1557.]

f'-g'. ♂, ♂ imm. Korinchi Peak, Sumatra, 7,200 feet. 12th-14th May. [Nos. 1511, 1531.]

h'. ♂ imm. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 3rd June. [No. 1856.]

Adult:—"Iris amethyst or plum, bill cherry red, culmen darker, feet and claws pale orange, orbital skin turquoise blue, purplish round the eye, verditer green at gape."

Immature:—"Iris plum, bill yellowish, the culmen dark, feet yellow, orbital skin turquoise, the gape verditer green."

Very common in heavy jungle from the valley floor up to about 5,000 feet, but not extending far up the peak itself. Like others of the family a silent, inactive bird, perching hunched up on boughs or large creepers and with a very moth-like flight. The crop of one examined contained small beetles and Heteroptera and one or two larval stick insects.

Females are distinguished from the males by having the vermiculations on the wing coverts much narrower, and whitish, not yellow, by the slightly paler yellow of the under-surface and by the absence of the maroon bar on the rump. Young birds have the greenish pectoral band partially rusty buff and the lesser upper wing coverts with large heart-shaped spots of lemon yellow on the shaft not extending to the edge of the feathers. The maroon rump band of the male is apparently developed at a very early age.

48. *Surniculus lugubris* subsp. *brachyurus*, Stresemann.

Surniculus lugubris (Horsf.); Salvad. Ann. Mus. Civ. Gen. xiv, p. 184 (879); Buttikofer, Notes Leyden Mus. ix, p. 27 (1887); Shelley, Cat. Birds Brit. Mus. xix, p. 227 (1891).

Surniculus lugubris brachyurus, Stresemann, Nov. Zool. xx, p. 340 (1913); Robinson, Journ. Fed. Malay States Mus. vii, p. 157 (1917).

a. 1 ♂. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 19th March, 1914. [No. 258.]

b. 1 ♀. Pasir Ganting, West Sumatran Coast, Lat. 2° S. 22nd June 1914. [No. 2080.]

"Iris brown, or red, bill black, feet slaty."

The only examples obtained, though the species is doubtless common in the winter months.

These specimens have the wings 126 and 123 and the tails 123, 123 mm. A female from Toentoengan Estate, near Deli, N. E. Sumatra, has the wing 136, tail not measureable. In the typical race the tail is longer than the wing.

49. *Cacomantis sepulchralis* subsp. *sepulchralis* (S. Muell.).

Cacomantis sepulchralis (S. Muell.); Finsch, Notes Leyden Mus. xxii, p. 82 (1900). Vorderman, op. cit. p. 391, no. 74.

Cacomantis merulinus (part.), Shelley, Cat. Birds Brit. Mus. xix, p. 268 (1891).

Cacomantis sepulchralis sepulchralis, Stresemann, Nov. Zool. xix, pp. 332-334 (1912).

a. imm. Sungei Penoh, Korinchi Valley, Sumatra.
March 9th. [No. 10.]

"Iris hazel, periocular skin lemon yellow, bill black, pinkish at gape, feet brownish flesh."

The specimen is quite young, as is indicated by the remains of cross barring on the feathers of the crown, but has a wing of 116 mm., considerably exceeding that given for any insular specimen of the closely allied *C. merulinus* by Stresemann (*loc. cit.*)

50. *Penthoceryx sonnerati* subsp. *pravata* (Horsf.).

Cuculus pravata, Horsf. Trans. Linn. Soc. xiii, p. 179 (1822).

Cuculus sonnerati (part.) Shelley, Cat. Birds Brit. Mus. xvii, p. 262 (1892).

Penthoceryx pravatus, Salvad. Ann. Mus. Civ. Gen. xiv, p. 185 (1879); Volderman, op. cit. p. 391, no. 72; Finsch, Notes Leyden Mus. xxii, p. 78 (1901).

a. ♂. Sandaran Agong, Korinchi Valley, 2,450 feet.
27th May, 1914. [No. 1702.]

"Iris yellow, upper mandible black, lower slate, feet greenish."

Apparently rare everywhere in the Malayan region.

The Malayan form is distinguished from that of peninsular India by its smaller size. The present specimen has a wing of 108 mm., two from the North of the Malay Peninsula 113, 110, two from near Kuala Lumpur 109, 110, and one from N. Johore 110. The average size of Indian birds is given by Shelley and Blanford as 123 mm., 4.8 in.

51. *Cuculus intermedius* subsp. *insulinde*, Hartert.

Cuculus poliocephalus, Lath.: Shelley, Cat. Birds Brit. Mus. p. 255 (1892); Sharpe, Ibis, 1890, p. 11; Finsch, Notes Leyden Mus. xxiii, pp. 105-107 (1901); Robinson, Journ. Fed. Malay States Mus. ii, p. 177 (1909).

Cuculus intermedius insulinde, Hartert, Vög. Palaarkt. Faun. Heft. vii, p. 952 (1912).

? *Cuculus canoroides*, S. Muell. Verh. Nat. Gesch. Land. en Volk. p. 235 (note) 1839-44; Bp. Consp. Av. i. p. 103 (1850).

a-b. ♀ ad., ♀ imm. Sungei Kumbang, Korinchi, 4,500 feet. 16th-21st April. [Nos. 948, 1061.]

c. ♀ imm. Korinchi Peak, Sumatra, 7,300 feet. 3rd May. [No. 1330.]

d-e. ♂ ad., pull. Barong Bharu, Barisan Range, 4000 feet. West Sumatra, Lat. 2° S. 9th-11th June. [Nos. 1933, 1976.]

The note of this cuckoo, harsher and more prolonged than that of the European species and frequently with an additional two syllables on a falling scale, was often heard round our camp at Sungei Kumbang.

Adult.—"Iris orange, orbital ring chrome, bill greenish, yellow at gape, culmen black, feet pale, yellow claws, yellow horn."

Imm..—"Iris hazel, orbital wattle greenish yellow, upper mandible blackish, pale yellow at the extreme base, lower mandible greenish horn, black at tip, yellow at base and gape, feet pale yellow."

The adult male is very dark steel grey above and the grey of the throat is not clouded with rufous as is the case in the adult female, which is also of a lighter grey above. Immature birds have the whole upper surface including the tail barred rufous and black, the primaries barred on the outer web and the barring of the under surface continued up to the chin. The nestling is blackish above, all the feathers with broad white edgings, and barred black and white below; primaries and tail feathers toothed with rufous buff on the outer webs.

This species occurs in Borneo, Java, Sumatra, the Malay Peninsula and the lesser Sunda Islands, apparently always at considerable elevations, being therefore somewhat rare in collections.

We have followed Hartert in the name for the form though it is more probable that *C. canoroides*, which he regards as a synonym of *C. canorus telephonus* tom. cit. p. 948, Heine, is the right title. S. Mueller did not accompany his name with a description but this has been supplied by Buonaparte (*loc. cit.*)

52. *Rhopodytes tristis* subsp. *elongatus* (S. Muell.).

Phoenicophaes elongatus, S. Muell. Tijds. Nat. Gesch. en Phys. ii, p. 342, pl. 9, fig. 1 (1835); Snelleman in Veth's Midden-Sumatra Exped. Vogels iv, p. 34 (1884).

Rhopodytes elongatus, (S. Muell.) Buttkofer, Notes Leyden Mus. ix, p. 30 (1887); Shelley, Cat. Birds Brit. Mus. xix, p. 389 (1891); Salvad. Ann. Mus. Civ. Gen. (2) xii, p. 46 (1891).

a-d. 2 ♂, 1 ♂ imm. 1 ♀. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 17-25th March, 1914. [Nos. 198, 430-1, 442.]

e. 1 ♂. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. 15th May, 1914. [No. 1561.]

f-h. 2 ♂, 1 ♀. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 25-26th May 1914. [Nos. 1657, 1681-2.]

Adult:—"Iris inner ring claret, outer white; bill sage green, a narrow stripe through nostril to gape claret, feet slaty green, orbital skin crimson lake."

Immature: "Iris reddish brown; bill: upper mandible slaty grey, lower green; feet greenish grey."

Fairly common on the lower forested slopes of the Korinchi valley and also amongst secondary growth but not ascending to any height as it was never seen above Sungei Kumbang.

An awkward, clumsy bird, which climbs about trees, especially those festooned with creepers, apparently using its wings with difficulty and progressing largely by hopping.

This race, for it is little more, comes very close to the form of *Rh. tristis* from the Malay Peninsula, Indo-China and Hainan, described as *Rh. tristis hainanus* by Hartert (Nov. Zool. xvii, p. 218 (1910)). In size it is slightly smaller (wing about 146 against 155 mm.), while it generally has a pronounced wash of yellowish on the breast and lacks the dark shaft stripes to the feathers of the head and foreneck. In one specimen however (No. 430), the yellow wash is almost absent, while the dark shaft stripes are distinctly in evidence.

Rhopodytes diardi, Less.

Melias diardi, Lesson, *Traite*, p. 132 (1831).

Phoenicophaes sumatranus,^{*} Snelleman (nec. Raffles), in Veth's *Midden-Sumatra Vogels* iv, p. 34 (1884).

Rhopodytes diardi, Salvad. *Ann. Mus. Civ. Gen.* xiv, p. 186 (1879); Buttikofer *Notes Leyden Mus.* ix, p. 30 (1887); Shelley *Cat. Birds Brit. Mus.* xix, p. 390 (1891); Salvad. *Ann. Mus. Civ. Gen.* (2) xii, p. 46 (1891).

a.-b. 1 ♂, 1 ♀. Pasir Ganting, West Sumatran Coast, Lat. 2° S. 18th-22nd June, 1914. [Nos. 1998, 2081.]

"Iris reb or grey, bill sea green, bluish at base of mandible, feet slaty green, orbital skin crimson."

Very common in swampy jungle along the sea coast and in clumps of bamboo.

Rhinortha chlorophaea (Raffles).

Cuculus chlorophaeus, Raffles, Trans. Linn. Soc. xiii, p. 288 (1822).

Rhinortha chlorophaea (Raffles); Salvad. Ann. Mus. Civ. Gen. xiv, p. 186 (1879); Nicholson, Ibis, 1882, p. 54; id. op. cit. 1883, p. 242; Buttikofer, Notes Leyden Mus. ix, p. 29 (1887); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 392, no. 80 (1889); Shelley, Cat. Birds Brit. Mus. xix, p. 393 (1891); Salvad. Ann. Mus. Civ. Gen. (2) xii, p. 46 (1891); Salvad. Bull. Mus. Zool. Turin, xi, p. 5 (1896); Hartert, Nov. Zool. ix, p. 199 (1902); Parrot, Abh. Konigl. Akad. Bayer. 11, xxiv, Bd. 1, p. 190 (1907).

a.-c. 1 ♂, 2 ♀. Pasir Ganting, West Sumatran Coast,
Lat. 2° S. 19th-20th June, 1914. [Nos.
2019, 2047-8.]

"Iris brown, bill sea-green, orbits verditer green, feet greenish slate."

Common in low country, creeping about the parasitic growths on large trees like a mammal.

Centropus rectunguis, Strickl.

Centropus rectunguis, Strickl.; Snelleman in Veth's Midden-Sumatra Exped. Vogels, iv, p. 34 (1884); Buttikofer, Notes Leyden Mus. ix, p. 32 (1887) (exclud. synonymy), Shelley, Cat. Birds Brit. Mus. xix, p. 343 (1891).

a. 1 ♂ imm. Pasir Ganting, West Sumatran Coast,
Lat. 2° S. June 19th, 1914. [No. 2020.]

"Iris grey, bill blackish horn, feet lead."

This immature bird has the undersurface, including the under wing coverts, black, narrowly barred with white, the sides of the face, forehead and loreal region barred black and white; rest of head and hind neck black, glossed with greenish steel.

It is evidently referable to this species, but has the black less glossed with violet blue than in the adult and the breast and flanks are slightly suffused with chocolate red.

Wing, which is fully grown, 181 mm., rather larger than Malayan specimens of *C. rectunguis*, but considerably smaller than *Centropus sinensis bubutus*, Horsf., which also occurs in the district.

Shot in scrub jungle, near the sea.

Stresemann (Nov. Zool. xix, pp. 337-8, 1912), apparently regards this species as merely the female of *Centropus bengalensis javanensis*. The two forms are, however, totally distinct, the present one having no seasonal change and having an entirely different colouration both above and below. The size too, is very much larger, and there does not appear to be

the sexual difference in dimensions that is so noticeable in *C. b. javanensis*.

If not kept distinct the species should be classed with *C. sinensis*. It is, however, different in habits, being much more of a jungle species than that form.

53. *Centropus bengalensis*, subsp. *javanensis* (Dumont).

Centrococcyx javanensis (Dum.); Salvad. Ann. Mus. Civ. Gen. xiv, p. 188 (1879); Nicholson, Ibis, 1883, p. 241; Vorderman, Nat. Tijds. Nederl. Ind. xlix, p. 392, no. 87 (1889); Salvad. Ann. Mus. Civ. Gen. (2) xii, p. 46 (1891); id. Bull. Mus. Zool. Turin, xi, p. 10 (1896).

Centropus javanicus, Shelley, Cat. Birds Brit. Mus. xix, p. 354 (1891).

Centropus bengalensis javanicus, Parrot, Abh. Konigl. Bayer. Akad. II, xxiv, Bd. I, p. 187 (1907).

Centropus bengalensis javanensis, Stresemann, Nov. Zool. xix, p. 337 (1912).

a. ♀ imm. Sungei Penoh, Korinchi Valley, Sumatra, 2,700 feet. 11th March, 1914. [No. 52.]

b-d. 1 ♂, 2 ♀. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 17th March-19th May. [Nos. 231, 262, 1597.]

e-g. 1 ♂, 2 ♀. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 26th May-2nd June 1914. [Nos. 1684, 1776, 1847.]

"Iris carmine, bill black, feet black or slaty black."

Common in waste ground and patches of reed or lalang grass in open country in the Korinchi Valley.

Parrot and Stresemann are obviously correct in regarding this Cuckoo as merely the representative in Malaysia of the Indian *C. bengalensis* and not as a distinct species, the meeting place of the two races being in the extreme north of the Malay Peninsula.

The sexual difference in size is very marked but is not noted by Shelley in the British Museum Catalogue, probably owing to the fact that he has taken the measurements of two different races. In the present series two males are 133, 137 and four females 154, 156, 162, 168 mm. in wing length.

54. *Calorhamphus hayi* (J. E. Grey).

Calorhamphus hayi (J. E. Grey); Shelley, Cat. Birds Brit. Mus. xix, p. 50 (1891).

Calorhamphus fuliginosus, Snelleman (nec. Temm.) Bijdr. Kennis der Fauna Midd.-Sumatra, iv (i), p. 35 (1884); Buttkofer, Notes Leyden Mus. ix, p. 16 (1887).

Calorhamphus fuliginosus hayi, Parrot, Abhandl. der K. Bayer Akad. Wiss. (2) Kl. xxiv, Bd. i, p. 173 (1907).

a-e. 4 ♂, 1 ♂ imm. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 25th May-1st June, 1914. [Nos. 1661-2, 1781, 1825-6.]

"Iris pale red, brown, chestnut or chocolate; bill black; feet orange."

This species was only met with on three occasions by our collectors in secondary jungle in the vicinity of the lake.

Sumatran specimens have been variously referred to the Malaccan (*C. hayi*) and to the Bornean (*C. fuliginosus*) race, but there can be little doubt that the former contention is correct, as all the skins in the present series can be exactly matched by others in a large series from the Federated Malay States, though the red of the throat is certainly slightly more intense than in the majority of Malayan specimens. The same remarks apply to a small series from the Deli District, N. E. Sumatra.

Immature birds can be at once distinguished by the tips of the secondary coverts, which are brick red, and by having the belly washed with pale sulphur yellow.

55. *Chotorhea chrysopogon* subsp. *chrysopogon* (Temm.).

Chotorhea chrysopogon (Temm.); Salvad. Ann. Mus. Civ. Gen. xiv, p. 178 (1879); Snelleman, op. cit. p. 57; Vorderm. op. cit. pp. 40, 389, no. 37 (1890).

Megalaema chrysopogon, Snelleman, op. cit. p. 35; Buttik. op. cit. p. 15; Parrot, op. cit. p. 171.

a-c. ♂, ♀, ♀ imm. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 27th May-1st June. [Nos. 1708, 1820, 1848.]

d. ♀ Pasir Ganting, Coast of W. Sumatra, Lat. 2° S. 22nd June, 1914. [No. 2082.]

"Iris chocolate or chestnut; bill black, slaty at base of lower mandible; feet sage green or plumbeous green."

Not uncommon in forest or secondary growth near the floor of the valley but not met with in the mountains.

The locality whence Temminck derived the specimens on which his description is based was the Padang District of West Sumatra and the present series may therefore be regarded as typical.

Comparison with a series of ten adult specimens from the Federated Malay States discloses differences in the latter which are quite sufficient to separate them at a glance from the typical Sumatran form. The Malayan race may be diagnosed as follows:

Chotorhea chrysopogon subsp. **laetus** nov.

In size and other respects similar to *C. chrysopogon chrysopogon*, from Sumatra, but having the yellow malar patch somewhat more extensive and bright golden yellow, almost orange in colour ("primuline yellow" Pl. xvi, Ridgeway, Color Standards and Nomenclature, Washington, 1912), against "Strontian yellow" in the Sumatran form. Red of occiput a little more extensive and the blue correspondingly reduced in area.

Type:—F. M. S. Mus. No. 1893/10, from Bukit Tangga, Negri Sembilan, Federated Malay States.

56. Cyanops oorti (S. Muell.).

Cyanops oorti (S. Muell.); Salvad. Ann. Mus. Civ. Gen. xiv, p. 180 (1879); id. op. cit. (ser. 2a) xii, p. 44 (1891); Shelley, op. cit. p. 70; Vorderm. op. cit. p. 589, no. 41; Robinson, Journ. Fed. Malay States Mus. ii, p. 179 (1909).

a. ♂. Sungei Penoh, Korinchi Valley, Sumatra, 2,650 feet. 10th March. [No. 30.]

b-r. 8 ♂, 8 ♀, 1 ♀ imm., 1 imm. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 14th-27th March. [Nos. 103, 131-2, 166, 172, 191-3, 246-7, 259, 288, 304, 376, 429, 434, 462, 475.]

s-y. 2 ♂, 3 ♀, 1 ♀ imm. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 25th May-1st June. [Nos. 1663, 1778, 1796-7, 1823-4.]

Adult: "Iris chestnut or chocolate, orbital skin dirty green; bill black, pale at base; feet plumbeous green. *Immature*: iris light hazel; bill blackish horn, blotched with yellowish; feet greenish lead."

Very abundant indeed on the lower slopes of the main Korinchi Valley but quite absent from the higher ranges and from the slopes of Korinchi Peak itself.

Comparison of a considerable number of skins from the Malay Peninsula with the large series indicated above reveals no constant differences of any importance; the bills of the Malay Peninsula specimens are perhaps a trifle smaller but the difference is hardly tangible.

Mesobucco duvauceli (Less.).

Mesobucco duvauceli (Less.); Shelley, op. cit. p. 85; Robinson, Journ. Fed. Malay States Mus. ii, p. 179 (1909).

Xantholaema duvaucelii, Buttik. op. cit. p. 16; Vorderman, op. cit. p. 389, no. 44.

a-e. 2 ♂ ad, 2 ♂ imm., ♀ imm. Pasir Ganting, Coast of West Sumatra, Lat. 2° S. June 18th-22nd. [Nos. 1992, 2040-2, 2084.]

"Iris chestnut; bill black, bluish at base, feet greenish lead or greenish yellow."

The two adult birds do not differ materially from others from the south of the Malay Peninsula, having the ear coverts pure black, hardly tinged with blue. The Bornean form has been separated by Parrot, (*op. cit.* p. 171), under the name, *Megalaema duvauceli borneonensis*, on account of its alleged larger size and brighter colouration, but no exact details are given.

57. *Xantholaema haemacephala* (P. L. S. Mull.).

Xantholaema haemacephala (P. L. S. Mull.); Salvad. Ann. Mus. Civ. Gen. ser. 2a xii, p. 43 (1891); Buttik. *op. cit.* p. 16; Vorderman, *op. cit.* p. 389, no. 42; Shelley, *op. cit.* p. 89.

Bucco rafflesius, Boie Brief. Ost. Ind. no. 15 (1832).

Megalaema flavigula, Snelleman, *op. cit.* p. 35.

Megalaema haemacephala delica, Parrot, *op. cit.* p. 169.

Xantholaema haemacephala, Robinson, Journ. Fed. Malay States Mus. vii, pp. 165, 166 (1917).

a-d. 4 ♂. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 19th March-19th May. [Nos. 245, 449, 1606-7.]

e-y. 10 ♂, 1 ♂ imm., 6 ♀, 3 ♀ imm. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 24th May-8th June. [Nos. 1631, 1645, 1655-6, 1674, 1694, 1707, 1709, 1720-1, 1772-3, 1742, 1798, 1812-3, 1842, 1850, 1857-8, 1874, 1890.]

x. ♀ imm. Pasir Ganting, West Sumatra Coast, Lat. 2° S. 22nd June. [No. 2077.]

"Iris chestnut, orbital skin crimson lake; bill black, whitish at base; feet coral pink."

The Coppersmith was abundant in open country and garden land throughout the length of the Korinchi Valley, but, as in other countries that it inhabits, was not found in old forest.

Parrot (*loc. cit.*) correctly recognising that the type locality of the species is the Philippine Islands has separated the bird from *East Sumatra* on the strength of a slightly shorter wing measurement and an ill defined difference of tint in the greenish grey of the upper surface which may be largely due to the age of the plumage.

The differences in size of our *West Sumatran* series do not bear out Herr Parrot's remarks; his small and unsexed series from *East Sumatra* had a wing length of 71-74 mm. and a tail of 40-42 mm., averaging 72.3 and 41.3 mm.; 12 adult males in our collection vary from 83-78 and 43-38 in wing and tail, averaging 79.6 and 40.7; 6 females range from 80-75 and

41-38, averaging 77.5 and 39 mm., the average for the whole series of 18 specimens being 79.0 and 40.1 for the wing and tail.

The difference in colour between our series and a large number from the northern and central parts of the Malay Peninsula is, however, very marked, and quite sufficient to warrant a subspecific distinction. All the Malayan specimens without exception have a conspicuous orange yellow collar beneath the scarlet pectoral patch, which is at most only slightly indicated in the Sumatran specimens which, in addition, have the green centres to the feathers of the abdomen and flanks more restricted and the margins of a creamy rather than a sulphury yellow. For this mainland form however, the name *Bucco indicus*, Latham (Ind. Orn., p. 205 (1790)), is already available, while even if distinct from the typical Philippine form there is at least one title¹ in the synonymy which applies to the race inhabiting the Indo-Malayan islands, exclusive of the Philippines, and until these have been shown to be inapplicable one is not justified in accepting Herr Parrot's name.

58. *Psilopogon pyrolophus*. S. Muell.

Psilopogon pyrolophus, S. Muell.; *Salvad. Ann. Mus. Civ. Gen.* xiv, p. 14 (1879); *Nichols. Ibis*, 1883, p. 243; *Sharpe, P.Z.S.* 1886, p. 352; *id. op. cit.* 1887, p. 442; *Buttik. Notes Leyden Mus.* ix, p. 178 (1887); *Shelley, Cat. Birds Brit. Mus.* xix, p. 98 (1891); *Salvad. Ann. Mus. Civ. Gen. ser. 2a*, xii, p. 43, (1891); *Vorderman, Nat. Tijd. Ned.-Ind.* xlix, pp. 42, 389, no. 45 (1890); *Parrot, Abhandl. der K. Bayer Akad. der Wiss.* (2) Kl. xxiv, Bd. i, p. 173 (1907).

- a. ♂ Sungei Penoh, Korinchi Valley, Sumatra, 2,600 feet. March 12th, 1914. [No. 78.]
- b-k. 4 ♂, 5 ♀, ♀ imm. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. March 14th-28th. [Nos. 91, 117, 140, 210, 242, 361, 397, 437, 455, 492.]
- l-o. 3 ♂ 3 ♀. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. April, May, 1914. [Nos. 552, 571, 870, 930-1, 1560.]
- q-r. ♂, ♀. Korinchi Peak, Sumatra, 7,300 feet. 30th April, 1914. [No. 1290, 1295.]
- s-u. ♂, 2 ♀. Barong Bharu, Barisan Range, West Sumatra, Lat. 2° S. 4,000 feet. 8th-11th June, 1914. [Nos. 1941, 1979, 2087.]

"Iris chocolate or chestnut, bill apple green with a median vertical black bar; feet greenish lead, yellowish green or sage green."

¹ *Bucco rafflesius*, Boie.

The large series before us, nearly all of which are fairly adult birds, shows that Shelley (*loc cit.*) is not correct in stating that the sexes are similar in colour. All the adult males possess a patch of maroon red on the sooty black of the hinder part of the crown behind the hoary transverse band, which is lacking in all the females. Immature birds have the yellow and black gorget duller and much less defined and the hinder crown suffused with dark green, not brownish black, sharply separated from the hoary white transverse band.

A careful comparison of the above series with an equally large one from the Malay Peninsula discloses no points of difference which can be regarded as of even subspecific value, though Malay Peninsula specimens are possibly very slightly smaller.

This barbet, as in the Malay Peninsula, was one of the commonest birds in the mountain jungle up to about 5,000 feet in altitude, after which it began to thin out rapidly, being rare at 7,000 feet and non-existent a thousand feet higher. It feeds in companies of five or six among the creepers investing the larger forest trees, scrambling about among the leaves and stems with the action of a parrot, using its bill in the process. It was particularly fond of a large and showy creeper belonging to the *Melastomaceae*, with pink flowers and sticky fruit, with which its plumage is not unfrequently daubed. It does not take to flight until much disturbed, when its action is slow and laboured. The note is a whistle, but the bird is not a particularly noisy species.

59. *Gecinus dedemi*, Van Oort. (Pl. V, figs. 1 & 2).

Gecinus dedemi, Van Oort, Notes Leyden Mus. xxxiv, p. 59 (1911).

a-d. 1 ♂, 3 ♀. Sungei Kumbang, Korinchi, Sumatra,
4,700 feet. 3rd April-15th May, 1914.
[Nos. 617, 697-8, 1558.]

"Iris red or chestnut, bill dark slate green, slaty black or black, feet slaty grey tinged with green."

This fine woodpecker, which appears to have no very near allies, has hitherto been known from the type only, a male, collected by the Baron van Dedem on the Sibajak Volcano in the Battak Mountains, N. E. Sumatra, at a height of 1,450 m., about 4,700 feet.

The male of the present series is unfortunately a poor specimen considerably damaged; it however agrees perfectly with the type description and with the dimensions given.

The females differ only in having the top of the head almost entirely black and in a rather shorter, less conspicuous malar stripe. In one the sides of the head are darker grey than in the other two and in two specimens there are one or two scarlet feathers in the fore-part of the crown, but we are



MENPES PRESS, WATFORD

1. GECINUS DEDENI. Van Oort. 1. ♂ 2. ♀
3. COCHOA BECCARII. Salvad.

certain that no mistake has been made in the sexing. In other respects the sexes are identical.

The dimensions of the three females are: Total length, 307-333; wing, 129-141; tail, 110-120; bill from gape, 45-55; tarsus 28-29.5 mm. Those given for the type are, wing, 135; tail, 100; culmen, 37, tarso-metatarsus, 25 mm.

According to our Dyak collectors, who alone came across the bird, it was very scarce and frequented very lofty trees only.

***Iyngipicus auritus* (Eyton).**

Iyngipicus auritus (Eyton); Nicholson, *Ibis*, 1883, p. 242; Buttikofer, *Notes Leyden Mus.* ix, p. 18 (1887); Vorderman, *Nat. Tijd. Nederl. Ind.* xlix, p. 390, no. 48 (1889); Hargitt, *Cat. Birds Brit. Mus.* xviii, p. 325 (1890); *Salvad. Ann. Mus. Civ. Gen.* (2), xii, p. 44 (1891).

Iyngipicus fusco-albidus, *Salvad. Ann. Mus. Civ. Gen.* xiv, p. 180 (1879); Nicholson, *Ibis*, 1882, p. 55.

Iyngipicus moluccensis (Gm.); Stone, *Proc. Acad. Nat. Sci. Philad.* liv, p. 679 (1902).

- a. 1 ♀. Pasir Ganting, West Sumatran Coast, Lat.
2° S. 19th June, 1914. [No. 2045.]

"Iris Indian red, bill dark horn, paler beneath, feet olive green."

Shot among the Casuarinas bordering the sea; the only specimen seen in over a week.

The bird is in very worn plumage but agrees well with four specimens obtained on the coast of Selangor in the Malay Peninsula and with a specimen from Java.

61. *Lepocestes porphyromelas* (Boie).

Lepocestes porphyromelas (Boie); *Salvad. Ann. Mus. Civ. Gen.* xiv, p. 181 (1879); Buttikofer, *Notes Leyden Mus.* ix, p. 23 (1887); Vorderman, *Nat. Tijd. Nederl. Ind.* xlix, p. 390, no. 51 (1889); Hargitt, *Cat. Birds Brit. Mus.* xviii, p. 382 (1890).

Blythipicus porphyromelas (Boie); Hartert, *Nov. Zool.* ix, p. 198 (1902).

Pyrrhopicus porphyromelas (Boie); Robinson & Kloss, *Ibis*, 1911, p. 46.

- a-c. 2 ♂, 1 ♀. Siolak Daras, Korinchi Valley,
Sumatra, 3,000 feet. 19th-28th March, 1914.
[Nos. 264, 487, 489.]
- d. 1 ♂. Sungei Kumbang, Korinchi, Sumatra, 4,700
feet. 7th April, 1914. [No. 730.]
- e. 1 ♂. Korinchi Peak, Sumatra, 7,300 feet. 5th
May, 1914. [No. 1371.]

"Iris Indian red, bill yellow, greenish at base, feet brownish."

Not very common anywhere and only as a rule found in dense and gloomy jungle, where it appears to frequent by preference fallen timber near the ground. Much more silent than most other species of Woodpeckers. In Korinchi fairly abundant from 3-5,000 feet but much rarer above that level and not occurring above about 7,500 feet.

Miglyptes tukki (Less.).

Miglyptes tukki (Less.); Vorderman, Nat. Tijds. Nederl. Ind. xlix, p. 390, no. 64 (1889), Hargitt, Cat. Birds Brit. Mus. xviii, p. 388 (1890); Salvad. Bull. Mus. Zool. Turin, xi, p. 4 (1896); Stone, Proc. Acad. Nat. Sci. Philad. liv, p. 680 (1902).

a.-b. 2♂. Pasir Ganting, West Sumatran Coast,
Lat. 2° S. 19th-20th June, 1914. [Nos.
2030, 2052.]

"Iris red, upper mandible black, lower bluish horn, feet greenish slate."

Fairly common in low country jungle throughout the Indo-Malayan countries.

62. Micropternus brachyurus subsp. badius (Vieill.).

Picus brachyurus, Vieill. Nouv. Dict. xxvi, p. 103 (1818); Snelleman in Veth's Midden-Sumatra Exped. Vogels, iv, p. 38 (1884).

Micropternus badius, Salvad. Ann. Mus. Civ. Gen. xiv, p. 184 (1879); Nicholson, Ibis, 1882, p. 55.

Micropternus brachyurus (Vieill.); Hargitt, Cat. Birds Brit. Mus. xviii, p. 396 (1889); Vorderman, Nat. Tijds. Nederl. Ind. xlix, p. 390, no. 65 (1889); Salvad. Ann. Mus. Civ. Gen. (2) xii, p. 45 (1891); id. Bull. Mus. Zool. Turin, xi, p. 4 (1896); Hartert, Nov. Zool. ix, p. 197 (1902); Buttikofer, Notes Leyden Mus. ix, p. 26 (1887); Stone, Proc. Acad. Nat. Sci. Philad. liv, p. 680 (1902).

a. 1 ♀. Sandaran Agong, Korinchi Valley, Sumatra,
2,450 feet. 25th May, 1914. [No. 1654.]

"Iris dark brown, bill bluish lead, feet brown."

This woodpecker is normally an inhabitant of second growth jungle and orchard land, where it lives very largely on tree termites. It was rare in the Korinchi Valley and the specimen enumerated was the only one met with by our party. The numerous specimens that we have examined from Sumatra are less ochreous and more chestnut than the series available from the Malay Peninsula but we have had no specimens of the true *M. b. brachyurus* from Java for comparison. If distinct from each other the Malay Peninsula bird will have to be known as *M. b. squamigularis*, Sundev. and the Sumatran as *M. b. badius*, Raffles.

Tiga javanensis (Ljung):

Picus tiga, Raffles Trans. Linn. Soc. xiii, p. 290 (1822); Snelleman in Veth's Midden-Sumatra Exped. Vogels. iv, p. 38 (1884).

Tiga javanensis (Ljung); Salvad. Ann. Mus. Civ. Gen. xiv, p. 183 (1879); Buttikofer Notes Leyden Mus. ix, p. 25 (1887); Hargitt, Cat. Birds Brit. Mus. xviii, p. 412 (1890); Vorderman, Nat. Tijds. Nederl. Ind. xlix, p. 390, no. 61 (1889); Salvad. Ann. Mus. Civ. Gen. (2) xii, p. 45 (1891); id. Bull. Mus. Zool. Turin, xi, p. 4 (1896).

Tiga javanensis javanensis, Parrot, Abh. Konigl. Akad. Bayer. II, xxiv, Bd. I, p. 179 (1907).

- a. 1 ♀. Pasir Ganting, West Sumatran Coast, Lat. 2° S. 20th June, 1914. [No. 2055.]

"Iris red, upper mandible black, lower slate, black at tip, feet greenish."

Fairly common on the coast among the coconut palms. Not met with in the Korinchi valley.

63. Chrysophlegma mystacale, Salvad.

Chrysophlegma mystacale, Salvad. Ann. Mus. Civ. Gen. xiv, p. 182 (1879); Nicholson, Ibis, 1883, p. 242; Buttikofer, Notes Leyden Mus. ix, p. 25 (1887); Vorderman, Nat. Tijds. Nederl. Ind. xlix, p. 390, no. 57 (1889); Hargitt, Cat. Birds Brit. Mus. xviii, p. 131 (1890).

- a-c. 1 ♂, 2 ♀. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 25th-26th March, 1914. [Nos. 433, 439, 441.]

- d-q. 6 ♂, 8 ♀. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. 1st-21st April, 1914. [Nos. 553, 625, 638, 652, 677, 687, 800, 877, 896-7, 928, 1071-3.]

- r, s. 2 ♀. Barong Bharu, Barisan Range, West Sumatra, Lat. 2° S. 4,000 feet. 10th June, 1914. [Nos. 1894, 1920.]

"Iris chestnut, orbital skin greenish, bill bluish white, horny white at tip, feet greenish slate."

Very common in pairs in heavy forest on high trees up to about 5,000 feet. A very noisy bird, yelling vociferously when alarmed and dodging round the tree trunks with great agility.

A very distinct species, perhaps nearest to *C. wrayi* of the mountains of the Malay Peninsula from which it differs in both sexes in lacking all white on the throat, in having the under surface greener, less greyish and the upper surface much more golden, less grassy, green. The yellow of the malar stripe in the male has a strong ochreous tinge, whereas in *C. wrayi* it is a pure pale citron yellow. The bill in the Sumatran species is also much paler.

The large series obtained is very uniform and all are fairly adult birds; there is evidence, however, that the young male has the malar stripe chestnut like the female and that the stripe changes to yellow gradually.

The species is widely distributed over the hill ranges of the whole of Sumatra.

64. *Chrysophlegma miniatum* subsp. *malaccense* (Lath.)

Picus malaccensis, Lath. Ind. Orn. i, p. 241 (1790).

Callolophus malaccensis, Salvad. Ann. Mus. Civ. Gen. xiv, p. 182 (1879); Buttikofer, Notes Leyden Mus. ix, p. 24 (1887); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 390, no. 55 (1889); id. Bull. Mus. Zool. Turin, xi, p. 4 (1896).

Chrysophlegma malaccense (Lath.); Hargitt, Cat. Birds Brit. Mus. xviii, p. 122 (1890); Salvad. Ann. Mus. Civ. Gen. (2) xii, p. 45 (1891).

Chrysophlegma miniatum malaccense (Lath.); Hartert, Nov. Zool. ix, p. 197 (1902); Stone, Proc. Acad. Nat. Sci. Philad. liv, p. 679 (1902); Parrot, Abh. Konigl. Akad. Bayer. II, xxiv, Bd. I, p. 174 (1907).

a. 1. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 24th May, 1914. [No. 1618.]

b-f. 2 ♂, 3 ♀. Pasir Ganting, West Sumatran Coast, Lat. 2° S. 18th-22nd June, 1914. [Nos. 2007-8, 2064, 2071, 2078.]

"Iris chestnut or Indian red, upper mandible blackish, lower bluish horn, feet plumbeous green or greenish brown."

Rare in the Korinchi Valley but very common indeed at Pasir Ganting among the Casuarinas fringing the sea.

This series, though all are in very shabby plumage, agrees perfectly with the birds from the Malay Peninsula in having the back and mantle in the main green, therein differing from the Javan form, in which it is red. The bird from Nias, *Ch. miniatum niasense*, Buttikofer (Notes Leyden Mus. xviii, p. 169 (1896)), curiously enough seems to be much more closely allied to the Javan form than to its geographical neighbour in Sumatra.

65. *Chrysocolaptes validus* subsp. *zanthopygius*, Finsch.

Xylolopes validus (Temm.); Salvad. Ann. Mus. Civ. Gen. xiv, p. 181 (1879); Nicholson, Ibis, 1882, p. 54; id. op. cit. 1883, p. 242; Buttikofer, Notes Leyden Mus. ix, p. 18 (1889); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 390, no. 50 (1889); Salvad. Bull. Mus. Zool. Turin, xi, p. 4 (1896); Stone, Proc. Acad. Nat. Sci. Philad. liv, p. 680 (1902).

Chrysocolaptes validus (Temm.); Hargitt, Cat. Birds Brit. Mus. xviii, p. 458 (1890); Parrot, Abh. Konigl. Akad. Bayer, II, xxiv, Bd. I, p. 177 (1907).

Chrysocolaptes xanthopygius, Finsch., Notes Leyden Mus. xxvi, p. 34 (1905) (Upper Mahakam R., Dutch Borneo.)

- a. 1 ♂. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 18th March, 1914. [No. 226.]
 b-d. 2 ♂, 1 ♀. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. 11th April-15th May, 1914. [Nos. 802, 876, 1582.]
 e-f. 1 ♂, 1 ♀. Korinchi Peak, Sumatra, 7,300 feet. 29-30th April, 1914. [Nos. 1291, 1296.]
 g. 1 ♀. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 26th May, 1914. [No. 1686.]

"Iris red, orange or chestnut red, upper mandible, brownish or whitish horn, lower pale yellow, whitish in the female, feet greenish or yellowish brown."

Fairly common in old jungle, on tall trees, generally in pairs.

Comparison of this series and many others from the Malay Peninsula with three adult males and a female from W. Java shows that Dr. Finsch was quite right in separating the two forms. We can however see no difference in the median chin stripe, the main distinction being that the Sumatran or Malayan birds have the upper parts much paler brown, the rump and upper tail coverts rich orange, flecked with flame colour, not deep crimson as in the Javan male.

The Javan female has the rump and lower back brownish grey, not pure white as in the Sumatran and Malayan females and the under surface more greyish. This character is also given by Finsch but we are uncertain if it would actually be shown by very adult Javan females.

66. *Psarisomus dalhousiae* subsp. *psittacinus* (Müll.).

Psarisomus psittacinus (Müll.); Salvad. Ann. Mus. Civ. Gen. xiv, p. 198 (1879); Buttikofer, Notes Leyden Mus. ix, p. 42 (1886); Sharpe, Ibis, 1889, p. 438; Vorderman, op. cit. p. 395, no. 122.

Psarisomus dalhousiae (Jameson); Sclater, Cat. Birds Brit. Mus. p. 458 (1888); Robinson, Journ. Fed. Malay States Mus. ii, p. 184 (1909).

- a-m. 8 ♂, 5 ♀. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 14th-27th March. [Nos. 105-7, 207, 221-2, 248, 336-7, 373-4, 402, 464.]
 n-a'. 12 ♂, 2 ♀. Sungei Kumbang, Korinchi, 4,600 feet. 2nd April-15th May. [Nos. 565, 605, 635, 665, 736, 765, 808, 836, 883, 965, 965a, 1034, 1069, 1563.]

"Iris greenish, orbital skin yellowish green, bill green, tip robin's egg blue, lower mandible mostly chrome, feet dull apple green." (No. 565).

Very common in jungle from 3,000 to 5,000 feet but ceasing abruptly above that level.

When large series like the present one are examined, the Malayan form can only very doubtfully be separated from that inhabiting Tenasserim and the Himalayas. The greater extent of the white lateral collar, relied on by Sharpe, seems largely dependent on age, young birds being much more yellow than old ones. Better characters are those given by Buttikofer, viz., a constantly longer tail (about 150 against 135 mm. in Himalayan specimens), quite devoid of any tinge of green, even at the base. Differences in the shade of green, which have been relied on to separate the specimens from Kinabalu, seem to us unimportant.

The sexual difference pointed out by Whitehead, viz., a partially concealed yellow spot on the middle of the nape in the female is quite constant in the series of Malayan and Sumatran specimens before us, being present in all those marked female and absent in all the males.

Peninsular specimens are practically identical with the Sumatran ones; many specimens, however, have a faint blue line separating the yellow of the throat from the green of the breast, which is present in a smaller proportion of the skins from Sumatra and then to a less extent.

67. *Serilophus lunatus* subsp. *intensus* Robinson & Kloss.

Serilophus lunatus, Buttikofer, Notes Leyden Mus. ix, p. 44 (1887); Vorderman, loc. cit. p. 395, no. 123.

Serilophus lunatus intensus, Robinson and Kloss, Journ. Straits Branch Roy. Asiat. Soc. No. 73, p. 276 (1916).

6 ♂, 4 ♀. Siolak Daras, Korinchi Valley, Sumatra,
3,000 feet. 18th-28th March. [Nos. 229,
256, 316, 363-5, 422, 496-7.]

"Iris emerald, orbital skin yellowish green; bill robin's egg blue, the basal part chrome yellow, tarsi and feet apple green, the terminal phalanges chrome yellow, claws Payne's grey." (No. 256.)

This subspecies differs from the Malay Peninsula form (*Serilophus lunatus rothschildi*, Hartert, Bull. B. O. C. vii, p. 1 (1898)) in the same way as that does from the typical race. The general colour of the mantle and the chestnut of the inner secondaries and rump is very much richer in tone and the colour of the under surface is a darker grey. The greyish white of the crown stops somewhat abruptly at the level of the eyes and the ear coverts are washed with clay brown as in the typical race and not so grey as in *S. l. rothschildi*. In dimensions the present subspecies does not appear to materially differ from either of the other races, though the bill is possibly slightly smaller. (Types of the subspecies. No. 256, ♂; No. 364, ♀).

The dimensions of six males are: total length, 167-177; wing, 80-86; tail, 66-70; tarsus, 17.5-19; bill from gape, 20-23 mm., and of four females, total length, 165-178; wing, 78-87; tail, 67-69; tarsus, 18.5-20.5; bill from gape, 20.5-22.5 mm.

Both Sclater in the British Museum Catalogue (Vol. xiv, 1888) and Sharpe, in the Hand-list (Vol. iii, 1901), have overlooked the records of this genus from Sumatra, which is represented in the Leyden Museum by five specimens from the Padang Highlands.

68. *Eurylæmus ochromelas*, Raffles.

Eurylæmus ochromelas, Raffles, Trans. Linn. Soc. xiii, p. 297 (1822); Tweedd. Ibis, 1877, p. 317; Salvad. Ann. Mus. Civ. Gen. xiv, p. 198 (1879); Nicholson, Ibis, 1882, p. 64; Snelleman in Veth's Midden-Sumatra Exped. Vogels, iv, p. 37 (1884); Buttikofer, Notes Leyden Mus. ix, p. 43 (1887); Sclater, Cat. Birds Brit. Mus. xiv, p. 465 (1888); Salvad. Ann. Mus. Civ. Gen. (2) xii, p. 48 (1891); Parrot, Abh. Konigl. Akad. Bayer der Wissensch. I, Kl. XXIV, Bd. 8, p. 217 (1907).

a. 1 ♀. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 25th May, 1914. [No. 1660.]

"Iris chrome, bill robin's egg blue, upper mandible tinged with green, tomia of both mandibles black, feet flesh pink, claws dark."

Shot feeding in a large fig tree; the only specimen seen throughout the trip.

***Cymborhynchus macrorhynchus* subsp. *macrorhynchus* (Gm.)**

Eurylaimus lemniscatus, Raffles, Trans. Linn. Soc. xiii, p. 296 (1822.)

Cymborhynchus macrorhynchus (Gm.); Tweedd, Ibis, 1877, p. 317; Salvad. Ann. Mus. Civ. Gen. xiv, p. 199 (1879); Nicholson, Ibis, 1882, p. 64; id. 1883, p. 254; Snelleman in Veth's Midden-Sumatra Exped. Vogels, iv, p. 37 (1884); Buttikofer, Notes Leyden Mus. ix, p. 43 (1887); Sclater, Cat. Birds Brit. Mus. xiv, p. 468 (1888).

Cymborhynchus malaccensis, Salvad. Atti. R. Ac. Sci. Tor. ix, p. 425 (1874).

Cymborhynchus macrorhynchus lemniscatus (Raffles), Hartert, Nov. Zool. ix, p. 206 (1902); Parrot, Abh. Konigl. Akad. Bayer der Wissensch. II, Kl. XXIV, Bd. I, p. 218 (1907).

a-d. 2 ♂, 2 ♀. Pasir Ganting, West Sumatran Coast, Lat. 2° S. 18th June, 1914. [Nos. 2004, 2037.]

"Iris emerald, upper mandible robin's egg blue, lower chrome yellow, tip and tomia as the upper mandible, feet cobalt."

Salvadori and Hartert recognize three races of this broad-bill, viz:—*C. macrorhynchus affinis*, in which the white bars on

the tail feathers occur on both webs of the outer tail feathers; confined to Aracan and North Tenasserim; *C. macrorhynchus lemniscatus* (Raffles), syn. *C. malaccensis*, Salvad., in which the white bars are well marked but occur on the inner webs only; found in the Malay Peninsula, Sumatra and the smaller intervening islands, and *C. macrorhynchus macrorhynchus*, in which the white on the tail is practically obsolete, confined to Borneo.

This character however appears to be extremely variable, for several specimens submitted to us by the authorities of the Sarawak Museum coming from that State have the white as strongly pronounced as in many skins from the Malay Peninsula, which was evidently also the case with the collections of the Dutch Scientific Expedition to Central Borneo (vide *Buttikofer, Notes Leyden Mus.* xxi, p. 184 (1900)).

The above four birds have the white marks very faint, more so than in any Malayan Birds, which is also the case with certain of Klaesi's specimens from the Padang Highlands (*Buttikofer loc. cit.*) and with others collected by Abbot in Tapanuli Bay.

Our specimens from Pasir Ganting may be regarded as topotypical of *C. macrorhynchus lemniscatus*, which was probably collected in Bencoolen, and the question arises whether, in view of the above facts, they should not be regarded as identical with the Bornean race, which is typical *C. macrorhynchus*.

On the other hand, birds from Eastern Sumatra and the Lampongs appear to have the white on the tail strongly marked and to agree with those from the Malay Peninsula.

But Western Sumatra, west of the main range, is an old land surface, while Eastern Sumatra is largely alluvial land of recent origin. It is therefore quite possible that the typical form may have existed in Borneo and West Sumatra, long prior to the deposition of the eastern area which may have been subsequently colonised from the Malay Peninsula, the mountains forming an effective barrier to the race inhabiting their western slopes. This would account for the occurrence of two closely allied forms in the same island. If this view is correct *Eurylaimus lemniscatus* becomes a pure synonym of *C. macrorhynchus* (Gm.), while the bird from the Malay Peninsula, Eastern and Southern Sumatra must be known as *C. macrorhynchus malaccensis*, Salvad.

PASSERES.

69. *Pitta schneideri*. Hartert. (Pl. VI.)

Pitta schneideri, Hartert, Bull. Brit. Orn. Club. xxv, pp. 9, 10 (1909).

- a. 1 ♂. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 15th March, 1914. [No. 120.]

Expedition to Korinchi:



PITTA SCHNEIDERI. Hartert. 1. ♂ 2. ♀ 3. Imm.

b-h. 4 ♂, 2 ♀, 1 ♀ imm. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. 25th March-10th May, 1914. [Nos. 423, 562, 633, 720, 776, 1578, 1601.]

i-n. 2 ♂, 2 ♀, 2 ♀ imm. Korinchi Peak, Sumatra, 7,300 feet. 27th April-14th May, 1914. [Nos. 1190-1, 1481, 1532, 1526.]

"Male, iris hazel, bill horn, pinkish at base, whitish at tip, feet purplish.

Female, iris hazel, bill greyish horn, pale at gape and tip, feet purplish."

Immature:—"Iris dark, bill mingled black and vermillion, feet purplish flesh."

This handsome *Pitta*, as the above series shows, was very common in the Korinchi country from the valley floor up to about 7,000 feet, above which it did not occur. Its habits were similar to those of other species of the genus, and it was met with, generally in pairs, running about the paths and among the undergrowth. Its food apparently consisted largely of a very big species of cock-roach not uncommon among the vegetation, but vegetable matter was also taken. The note is a loud whistle not unlike that of *Myiophoneus*, and was often heard at Sungei Kumbang in the early morning.

The adult male and the immature specimens agree perfectly with Hartert's description; the adult female has not hitherto been described but differs from the other sex in having the back and mantle, scapulars and wing coverts oliveaceous brown, less chestnut than the head and in entirely lacking the black collar on the hind neck. The upper tail coverts and tail are blue.

Dimensions: Males, total length, 207-228; wing, 118-125; tail, 54-63; bill from gape, 37-39.5; tarsus, 50.5-56 mm. Females, total length, 222-230; wing, 117-118; tail, 57-58; bill from gape, 36-38; tarsus, 50.5-52 mm.

70. *Pitta venusta*, Müll.

Pitta venusta, Müll.; Müll. and Schleg. Verh. Nat. Gesch. Pitta, pp. 6, 15 (1846); Nicholson, Ibis, 1883, p. 254; Sclater, Cat. Birds Brit. Mus. xiv, p. 429 (1888); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 406, no. 337 (1889).

a. 1 ♂. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 25th March, 1914. [No. 417.]

b-c. 2 ♂. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 29th May-2nd June, 1914. [Nos. 1760, 1838.]

"Iris hazel or brown, bill black, feet slate or purplish black."

Apparently not found above the lower slopes of the Valley as it was not met with even so high as Sungei Kumbang at 4,700 feet.

71. *Hirundo rustica* subsp. *gutturalis*, Scop.

Hirundo gutturalis, Scop.; Sharpe, Cat. Birds Brit. Mus. x, p. 134 (1885); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 396, no. 142 (1889); Salvad. Ann. Mus. Civ. Gen. (2) xii, p. 49 (1891).

a-d. 3♂, 1♀. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 15th-17th March, 1914.
[Nos. 150, 155, 164, 205.]

"Iris dark hazel, bill and feet black."

Fairly numerous in the Korinchi Valley, throughout March, though none remained in May and June.

72. *Hirundo javanica*, Sparrm.

Hirundo javanica, Sparrm.; Sharpe, Cat. Birds Brit. Mus. x, p. 142 (1885); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 396, no. 143 (1889); Salvad. Ann. Mus. Civ. Gen. (2) xii, p. 49 (1891).

a-d. 1♂, 1♂ imm. 1♀, 1♀ imm. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 24th-28th May, 1914. [Nos. 1634, 1723-5.]

"Iris dark, bill and feet black."

Apparently resident and breeding as in the Malay Peninsula.

***Cyornis cantatrix* (Temm.).**

Muscicapa cantatrix, Temm. Pl. Col. III, 226.

Siphia elegans (Temm.); Sharpe, Cat. Birds Brit. Mus. iv, p. 447; Nicholson, Ibis 1883, p. 245; Buttikofer, Notes Leyden Mus. xxi, p. 195 (1900).

Cyornis elegans (Temm.); Vorderman, op. cit. p. 397, no. 149; Finsch, Notes Leyden Mus. xxiii, p. 44 (1901); Robinson, Journ. Fed. Malay States Mus. v, p. 21 (1913).

Siphia cantatrix, Stone, Proc. Acad. Nat. Sci. Philad. liv, p. 681 (1902).

a. ♂. Pasir Ganting, Coast of W. Sumatra, Lat. 2° S. June 19th. [No. 2039.]

"Male, iris hazel; bill black; feet lavender."

Shot in swampy scrub in close proximity to the sea.

Except in Borneo this extremely handsome flycatcher appears to be by no means common, as the Leyden Museum possesses only two specimens from Sumatra, while we do not know of more than a dozen specimens from the Malay Peninsula, where it seems to be met with only in the southern half.

The present specimen differs from the only one of the same sex from the Malay Peninsula with which we have been able to compare it, in having the upper surface of an azure, not cobalt or ultramarine blue, but differences of a similar nature occur frequently in specimens of the same species of *Cyornis* from the same locality and are apparently of no diagnostic importance.

73. *Cyornis unicolor* subsp. *infuscata*, Hartert.

Siphia unicolor (Blyth); Sharpe, Cat. Birds Brit. Mus. iv, p. 444 (1879); Buttikofer, Notes Leyden Mus. xxi, p. 194 (1900); Finsch, op. cit. xxii, p. 206 (1901).

Cyornis unicolor (Blyth); Oates, Faun. Brit. Ind. Birds, ii, p. 22 (1890); Finsch, Notes Leyden Mus. xxiii, p. 50 (1901).

Cyornis cyanopolia, Boie, MS. Blyth, Ibis, 1870, p. 165; Vorderman, op. cit. p. 397, no. 151.

Cyornis unicolor infuscata, Hartert, Nov. Zool. ix, p. 550 (1902).

- a. [♀]. ♂. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. March 16th. [No. 176.]

The Malayan form of the Himalayan species, *C. unicolor*, has of late years been generally regarded as separable on account of its smaller size and brighter colouration under the name *Cyornis cyanopolia* which, however, Hartert has shown to be unusable as no description is attached to Blyth's quotation of Boie's MS. name in the Leyden Museum.

In the same paper Blyth described a specimen in the Leyden Museum to which the MS. name of "*Muscicapa infuscata*, Müll" was applied, regarding it as the female of *Cyornis cyanopolia* and this conclusion has been accepted by Hartert (*tom. cit.*) Unfortunately, however, Finsch (Notes Leyden Mus. xxii, p. 202 (1901)), on re-examination of the types of *Muscicapa infuscata*, has discovered that they are not referable to *Cyornis* at all but are the species known as *Rhinomyias pectoralis*, Salvad, which must accordingly be known as *Rhinomyias infuscata* (Blyth). However, in view of the fact that a description is attached to Hartert's remarks on the present form, the name is still available for this *Cyornis*, and his Gunong Tahan specimen must be regarded as the type of the subspecies.

With the exception of the above listed skin from Siolak Daras, the occurrence of this species in Sumatra has hitherto rested on Blyth's notes on the Leyden Museum collections.

It is, however, fairly common in Java and Borneo and also occurs, though not abundantly, in the Malay Peninsula. Five specimens from Perak and Selangor have a wing measurement of 74-78 and a tail of 66-72, agreeing well with

Hartert's figures of 76 and 62. Javan males have a wing of 77-80 and a Bornean male, 80 (Finsch), whilst our Sumatran male measures wing 78, tail 65 mm.

74. *Tarsiger hodgsoni* (Moore).

Tarsiger hodgsoni (Moore); Sharpe, Cat. Birds Brit. Mus. iv, p. 258 (1879); Whitehead, Explor. Kinabalu, p. 212 (1893).

Nitidula hodgsoni, Oates, Faun. Brit. Ind. Birds, ii, p. 27 (1890); Butler, Journ. Straits Branch Roy. Asiat. Soc. p. 18 (1899); Robinson, Journ. Fed. Malay States Mus. ii, p. 187 (1909).

a-c. 2 ♂, ♀. Sungei Kumbang, Korinchi, Sumatra, 4,600 feet. 2nd-11th April. [Nos. 586, 823-4.]

d-f. 2 ♂, ♀. Korinchi Peak, Sumatra, 7,300 feet. 28th April-10th May. [Nos. 1251-2, 1480.]

"Male, iris hazel, bill black, feet pale lead or lavender.

Female, iris hazel, bill black, slate or pale horn at base, feet mauve or pale blue slate."

This small flycatcher easily escapes notice, the more so as it is only found in dense jungle and usually affects lofty trees. At one time only known from the eastern Himalayas, it was subsequently discovered by Whitehead on Kinabalu in North Borneo and by Butler in the Malay Peninsula, where, though rare, it is widely distributed. It has not hitherto been recorded from Sumatra and is unknown in Java.

The four Sumatran males have the rufous orange of the under surface slightly paler in tint than in two from the Malay Peninsula, but the difference is insignificant.

75. *Anthipes solitaria* (S. Müll.).

Digenea solitaria (S. Müll); Sharpe, Cat. Birds Brit. Mus. iv, p. 460, pl. xiv. fig. 2 (1879); Finsch, Notes Leyden Mus. xxii, p. 206 (1901); Sharpe, P. Z. S. 1888, p. 247.

Digenea malayana, Sharpe, P. Z. S. 1888, p. 247.

Anthipes solitaria, Finsch, Notes Leyden Mus. xxiii, p. 39 (1901).

Anthipes malayana, Sharpe, P. Z. S. 1888, pp. 247, 272; Robinson, Journ. Fed. Malay States Mus. ii, p. 188 (1909).

a. ♀ ad. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 25th March. [No. 416.]

b. ♀ vix ad. Barong Bharu, Barisan Range, West Sumatra, Lat. 2° S. 4,000 feet. June 6th. [No. 1949.]

"Iris hazel, bill black, feet whitish."

Living among bushes, low down in dense forest. Rare in the districts visited by us and probably actually so, as there

are no records of other than the original series collected by S. Müller on Singgalang, Padang Highlands, and now in the London, Leyden and Liverpool Museums.

The two specimens differ somewhat, that from Barong Bharu, which is probably a younger bird, being much darker and less rufous above, with the ear coverts and sides of the head but little brighter than the back and with the narrow black line separating the white gorget from the breast barely indicated.

Comparison of Sumatran birds with a series of twenty-two specimens from the southern half of the Malay Peninsula, including the actual type locality of *M. malayana*, shows that this form cannot be separated even subspecifically from *A. solitaria*, the figure of which, given by Sharpe (*loc. cit.*) is very bad, especially as regards the colour of the flanks and mantle, which are far too ruddy.

76. *Niltava grandis* subsp. *decipiens*, Salvad.

Niltava grandis, Wardl. Rams. P. Z. S. 1880, p. 14; Buttikofer, Notes Leyden Mus. ix, p. 45 (1886); Vorderman, Nat. Tijd. Ned. Ind. xlix, p. 397, no. 169 (1889).

Niltava decipiens, Salvad. Ann. Mus. Civ. Gen. (2) xii, p. 49 (1891); Ogilvie Grant, Fascic. Malay. Zool. iii, p. 94 (1905); Id. Journ. Fed. Malay States Mus. iii, p. 37 (1908).

Niltava grandis decipiens, Salvad.; Hartert, Nov. Zool. ix, p. 551 (1902); Robinson, Journ. Fed. Malay States Mus. ii, p. 188 (1909).

a-r. 12 ♂, 6 ♀. Siolak Daras, Korinchi Valley, Sumatra. 22nd March-19th May, 1914. [Nos. 318, 338-341, 366-372, 401, 421, 428, 468, 474, 500, 1596].

s-u. 1 ♂, 2 ♀. Barong Bharu, Barisan Range, West Sumatra, Lat. 2° S. 4,000 feet. 6th-10th June, 1914. [Nos. 1924, 1930, 2097.]

"Male: Iris hazel, bill black, feet purplish black. Female: Iris hazel, bill black, feet lavender brown."

Abundant in a limited zone between 3,000 and 4,500 feet, but not ascending as far as our camp at Sungei Kumbang. Generally found singly or in pairs and very much more terrestrial in its habits than most flycatchers.

In size and colour birds from the Malay Peninsula and Sumatra agree perfectly, wing ranging from 92-101 mm.

77. *Niltava sumatrana*, Salvad.

Niltava sumatrana, Salvad. Ann. Mus. Civ. Gen. xiv, p. 201 (1879); Vorderman, *loc. cit.* p. 347, no. 170 (1890); Robinson, Journ. Fed. Malay States Mus. v. p. 25 (1914).

Cyornis malayensis, Robinson, Journ. Fed. Malay States Mus., *op. cit.* supra (*laps. cal.*).

Cyornis peninsularis, Robinson, Journ. Fed. Malay States Mus. ii, p. 164 (1909).

- a. 16 ♂, 10 ♀. Korinchi Peak, Sumatra, 7,300 feet. April 24th-May 7th. [Nos. 1103-6, 1123, 1130-1, 1136-8, 1151, 1167, 1175, 1218, 1221, 1229-31, 1269-73, 1307-8, 1437.]
- a'-v'. 17 ♂, 2 ♀, 2 ♂ imm., 1 ♀ imm. Korinchi Peak, Sumatra, 10,000 feet. 3rd-7th May. [Nos. 1336-7, 1360-4, 1380-1, 1383, 1385, 1402, 1407, 1413-4, 1422, 1445-50.]
- w', x'. ♂ ♀. Korinchi Peak, Sumatra, 10,500 feet. 27th April. [Nos. 1199, 1200.]

"Iris hazel; bill black; feet greenish or greyish brown, the soles yellowish."

On Korinchi Peak, proper, this beautiful flycatcher was quite the commonest bird, though its zone was very limited, no specimens being met with below the level of our camp at 7,300 feet, whilst it did not range above the forest line at about 10,600 feet.

In habits it was very tame and confiding, travelling in pairs; the note is a clear whistle, but the bird is not a noisy one.

This species, though so extraordinarily common on Korinchi Peak, is apparently very rare in collections, the five specimens secured by Beccari being the only specimens hitherto obtained in Sumatra. Comparison of two males and a female from the mountains of the Malay Peninsula show that they are absolutely conspecific.

The species belongs to a small group, continental in origin, which includes *C. oatesi*, Salvad., from Tenasserim, and *C. vivida*, Swinh. from Formosa, and it is more than doubtful if they are properly retained in the genus *Niltava*, though they are equally distinct from the typical species of *Cyornis*.

78. *Poliomyias mugimaki* (Temm.).

Poliomyias luteola (Pall.); Sharpe, Cat. Birds Brit. Mus. iv, p. 201 (1879); Nicholson, Ibis, 1883, p. 245; Salvad. Ann. Mus. Civ. Gen. ser. 2a, xii, p. 52 (1891); Robinson, Journ. Fed. Malay States Mus. ii, p. 188 (1909).

Erythrostera rufigula, Sharpe, Notes Leyden Mus. i, p. 227 (1878).

Muscicapula luteola, Vorderman, op. cit. p. 397, no. 146.

Muscicapa mugimaki (Temm): Hartert. Vog. Palaarkt Faun. I, p. 492 (1910).

- a. ♂ imm. Sungei Penoh, Korinchi Valley, Sumatra, 2,600 feet. March 10th. [No. 38.]

b-l. 4 ♂ ad., 3 ♂ imm., 4 ♀. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. March 19th-28th. [Nos. 225, 265-6, 287, 299, 311-3, 388, 454, 490.]

m. ♀. Sungei Kumbang, Korinchi, 4,600 feet. March 26th. [No. 592.]

"Adult male: iris black, bill black, slate on lower mandible, yellow at base, feet yellowish brown. Immature males and females: iris dark or hazel; bill horn, pink beneath; feet brownish, the soles yellowish."

In the four fully adult males, there is considerable variation in the tint of the upper surface, which ranges from an almost pure black to a slaty grey. One specimen (No 265), sexed as a female, possibly erroneously, resembles the males, but has the upper surface grey, the feathers with darker centres. The immature males differ only from the females in having ill defined buffy white tips to the lesser and greater wing-coverts, which are barely indicated in the female and in having the orange buff of the under surface of a richer tint.

Found sparingly in secondary jungle and at the edges of jungle clearings on the valley slopes up to about 4,500 feet.

The species is presumably only a winter resident in Sumatra. Modigliani obtained it in December and January near the Toba Lake in N. E. Sumatra; in the Malay Peninsula it occurs from November to April.

79. *Dendrobiastes hyperythra* subsp. *malayana* (Ogilvie Grant.)

Muscicapula hyperythra, Salvad. Ann. Mus. Civ. Gen. xiv, p. 203 (1879); Sharpe, Cat. Birds Brit. Mus. iv, p. 206 (1879); Vorderman, op. cit. p. 397, no. 166 (1890).

Muscicapula malayana, Ogilvie Grant, Bull. Brit. Orn. Club, xix, p. 10 (1906); Robinson Journ. Fed. Malay States Mus. ii, p. 189 (1909).

Dendrobiastes hyperythra malayana, Stresemann, Nov. Zool. xix, p. 331 (1912).

a-c. 2 ♂, ♀. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 23rd-25th March. [Nos. 326, 327, 403.]

d-b'. 16 ♂, 9 ♀. Sungei Kumbang, Korinchi, Sumatra, 4,600 feet. 31st March-19th April. [Nos. 525-7, 536, 588-9, 597, 639, 679, 751, 766, 813, 834, 866, 879, 899, 900, 918, 937, 951, 971-2, 1002, 1012-3.]

c'-i'. 4 ♂, 3 ♀. Korinchi Peak, Sumatra, 7,300 feet. 24th April-13th May. [Nos. 1109, 1294, 1428-9, 1494, 1513, 1522.]

"Male: iris hazel; bill black, feet slaty purplish or lilac. Female: iris hazel, bill black; feet whitish pink or pale flesh."

Scarce on the lower slopes of the valley, becoming very abundant on the foot hills between 4-6,000 feet, thinning out above that level and disappearing entirely above about 7,500 feet.

Unlike the preceding species this flycatcher is much more retiring in its habits, being found only in fairly deep jungle, where it is met with in pairs flitting about the epiphytes and creepers that clothe the trees, not usually at any great height above the ground. It is very active and restless in its habits and does not evince the same curiosity and fearlessness of man, shown by so many of the montane flycatchers.

The large series collected by us is on the whole very uniform and agrees well with typical specimens of the Malayan race collected on Mt. Tahan. The only variation shown is in the intensity of the orange or orange buff colour on the breasts of both males and females, which is considerably stronger in some specimens than in others.

80. *Muscicapula melanoleuca* subsp. *westermanni*, Sharpe.

Muscicapula maculata (Tick.); Sharpe, Cat. Birds Brit. Mus. iv, p. 207 (1879); Salvad. Ann. Mus. Civ. Gen. xiv, p. 203 (1879); Vorderman, op. cit. p. 397, no. 166.

Muscicapula westermanni, Sharpe, P. Z. S. 1888, p. 270; Robinson, Journ. Fed. Malay States Mus. ii, p. 188 (1909).

Muscicapula melanoleuca, Blyth, Journ. Asiat. Soc. Bengal, xii, p. 940 (1843); Finsch Notes Leyden Mus. xx, p. 93 (1898).

Muscicapula melanoleuca westermanni, Hartert, Nov. Zool. ix, p. 551 (1902).

a. ♂. Sungei Kumbang, Korinchi, Sumatra, 4,600 feet. 20th April. [No. 1053.]

b, c. 2 ♂. Korinchi Peak, Sumatra, 7,300 feet. 26th April-14th May. [Nos. 1172, 1537.]

d. ♂. Barong Bharu, Barisan Range, West Sumatra. Lat 2° S. 4,000 feet. 7th June. [No. 1951.]

"Iris dark or hazel; bill black, feet black, sometimes with a purplish tinge."

This pretty little flycatcher was not nearly so common as it is in the mountains of the Malay Peninsula and very few were seen, though two or three frequented our lower camp on Korinchi peak. They were very tame and affected low brushwood and fallen timber, flitting about in pairs.

All four specimens are fully adult males in freshly moulted plumage and agree perfectly with others of the same sex from the actual type locality of *Muscicapula westermanni*. We have followed the majority of recent authors in regarding the Malayan as being distinct from the Himalayan race, females in the F. M. S. Museum agreeing perfectly with Sharpe's description, having the upper parts clear grey, sharply differentiated from the clayey rufous of the upper tail coverts and tail.

81. *Gerygone modiglianii*, Salvad.

Gerygone modiglianii, Salvad, Ann. Mus. Civ. Gen. ser. 2a, xii, p. 52 (1891).

a. ♂. Sungei Penoh, Korinchi Valley, Sumatra, 2,600 feet. March 12th, 1914. [No. 84.]

"Iris hazel, bill and feet black."

These little birds are always rare in collections, more from the difficulty in securing them than from any real scarcity.

The following races, all of which are probably of no more than subspecific value, have been described, viz:—

Gerygone modiglianii, Salvad, *supra*. Toba Lake, N. E. Sumatra.

Gerygone pectoralis, Davison, Ibis, 1892, p. 99. Pahang, E. Coast, Malay Peninsula.

Gerygone griseus, Gyldenstolpe, Ornith. Monatsb. p. 27 (1916), id. Kungl. Sv. Vet. Akad. Handl. 56, No. 2, p. 78, Pl. 2, Fig. 2 (1916). Koh Lak, Peninsular Siam.

Gerygone salvadorii, Buttikofer, Notes Leyden Mus. xv, p. 174 (1893). Southern Borneo.

Gerygone modiglianii muscicapa, Oberholser, Smiths. Misc. Coll. 60, no. 7, p. 11 (1912). Engano Island.

Gerygone modiglianii jacobsoni, Van Oort, Notes Leyden Mus. xxxi, p. 207 (1909). Western Java.

In considering the value of these various races the fact must not be lost sight of that the species is very probably migratory, either partially within a country or over a wide range.

The Malay form for instance, so far as we are concerned, has only been collected in the Museum Grounds at Taiping, in the months of January, June, and August; elsewhere in the Malay Peninsula it is known from specimens from Trang, from Gunong Tahan between 2,000 and 5,000 feet, Pulau Panjang near Junk Zeylon (January), and from the coast of Pahang (type), and from Bagan Datoh, S. Perak, September.

The characters given for *G. modiglianii muscicapa* are smaller size, "posterior lower parts more extensively and more deeply yellow; sides, head, and neck paler, the lores and forehead particularly so, and contrasted more with the surrounding parts."

It is doubtful if the United States National Museum possesses specimens of the true *G. modiglianii* from Sumatra, but their collection contains examples of *G. m. pectoralis* from Trang, collected by Abbott: Mr. Oberholser has evidently regarded these as typical and has compared his Engano specimens with them. The differences, so far as colour goes, are exactly those which separate our six Malayan specimens from the one recorded above from Sungei Penoh. *Gerygone*

modiglianii muscicapa may therefore, in the absence of more detailed description and measurements (of which none are given) be relegated to the synonymy.

Salvadori states, after comparing the type of *G. m. jacobsoni* with that of *G. modiglianii*, that the former differs "in having the upper part and sides of the head somewhat paler and the lores more white," and these again are precisely the differences between our Sumatran bird and the four from Taiping. The validity of *G. modiglianii jacobsoni* is therefore very doubtful. *G. m. salvadorii* is stated to lack the whitish lores and therefore cannot be placed with the Javan and Malayan bird.

Possibly we have only two forms to deal with, a mountain race, the true *G. modiglianii* found in Borneo, Sumatra and the mountains of the Peninsula and a coastal form met with on both coasts of the Malay Peninsula and in Java, which is possibly migratory within local limits, as many coastal species certainly are.

82. *Hypothymis azurea* subsp. *prophata*, Oberholser.

Hypothymis azurea prophata, Oberholser, Proc. U. S. Nat. Mus. 39, p. 597 (1911).

a. ♂. Siolak Daras, Korinchi Valley, Sumatra,
3,000 feet. 18th March. [No. 223.]

"Iris carmine, eye wattle Cambridge blue, bill smalt, interior yellowish green, feet purplish cobalt."

Evidently rare or accidental at this elevation, as only the above specimen was obtained or seen.

The dimensions, wing 71, tail 74 and tarsus 16 mm. fall within the range given by Oberholser, with whose description the specimen agrees in other respects.

83. *Rhipidura albicollis* subsp. *atrata*, Salvad.

Rhipidura atrata, Salvad. Ann. Mus. Civ. Gen. xiv, p. 203 (1879).

a-b. ♀ ♀ imm. Siolak Daras, Korinchi Valley,
Sumatra, 3,000 feet. 17th-18th March. [Nos.
185, 224.]

c-i. 4♂, 3♀. Sungei Kumbang, Korinchi, Sumatra,
4,600 feet. 3rd-18th April. [Nos. 621, 643,
771, 791, 887, 912, 984.]

"Iris hazel, bill black, feet dull brownish purple, dark purplish or pale livid purplish."

The Sumatran race of this wide-spread mountain fly-catcher differs only from the Himalayan Race, *Rh. albicollis* (Vieill.), of which it is generally regarded as merely a subspecies in having the white tips to the tail-feathers more extensive.

This character, however, is even more pronounced in the birds from the mountains of the Malay Peninsula, in which the white on the outer web of the outer tail feather extends considerably farther than in the Sumatran specimens. Those from Kinabalu in Northern Borneo are said to agree with the Himalayan birds.

A scrub bird creeping about the lower branches of trees and flirting and expanding its tail like other species of the genus. We have, however, never seen it on the ground like its ally *Rh. javanica*, which is a garden and open-country bird never found in old jungle.

84. *Terpsiphone paradisi* subsp. *affinis* (Blyth).

Terpsiphone affinis (Blyth); Sharpe, Cat. Birds Brit. Mus. iv, p. 349; Buttkofer, Notes Leyden Mus. ix, p. 45 (1887).

Tchitrea affinis, Vorderman, op. cit. p. 397, no. 163.

b. ♂ imm. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 27th May. [No. 1696.]

a. ♂ imm. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 26th March. [No. 452.]

"Iris green, eye wattle smalt, bill cobalt, green inside, feet slate or lavender blue."

Being both immature males in the stage with short tails, these specimens are difficult to determine with any certainty. In the Malay Peninsula the Chinese species or race *T. incii* (Gould) occurs during the winter months and Sharpe in the "Catalogue" also records it from Sumatra. From the large size of the bill and the absence of any maroon gloss from the mantle and in view of the date of capture it is improbable that these specimens are *T. incii*. Forbes records the white plumaged stage from the Dempo Volcano further to the south, but recent writers on Chinese ornithology have shown that the fully adult *T. incii* is white also, which at one time was thought not to be the case.

85. *Philentoma velata* (Temm.)

Philentoma velatum (Temm.); Sharpe, Cat. Birds Brit. Mus. iv, p. 365 (1879); Buttkofer, Notes Leyden Mus. ix, p. 46 (1887); Vorderman, op. cit. p. 397, no. 165.

Philentoma velata, Hartert, Nov. Zool. ix, p. 553 (1902).

a-c. ♂, 2 ♀. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 16th-21st March. [Nos. 156, 284-5.]

"Iris carmine, bill black, feet slaty black."

An ordinary lowland forest bird, rare at this altitude.

Philentoma pyrhoptera (Temm.).

Philentoma pyrropterum (Temm.); Sharpe, Cat. Birds Brit. Mus. iv, p. 366 (1879); Vorderman, op. cit. p. 397, no. 164.

Philentoma pyrhoptera, Hartert, Nov. Zool. ix, p. 553 (1902).

a. ♂. Pasir Ganting, Coast of West Sumatra, Lat. 2° S. June 21st. [No. 2073.]

"Iris red, bill black, feet slate."

In swampy scrub jungle, near the sea.

86. Rhinomyias olivacea subsp. **brunneicauda** (Salvad.).

Hyloterpe brunneicauda, Salvad. Ann. Mus. Civ. Gen. xix, p. 210 (1879); Vorderman, op. cit. p. 399, no. 201.

Rhinomyias brunneicauda, Finsch, Notes Leyden Mus. xxiii, p. 40 (1901).

Pachycephala brunneicauda, Gadow, Cat. Birds Brit. Mus. vii, p. 220 (1883); Finsch, Notes Leyden Mus. xx, p. 225 (1889).

Siphia olivacea (part). Sharpe, Cat. Birds Brit. Mus. iv, p. 457 (1879).

Anthipes olivaceus (part). Oates, Faun. Brit. Ind. Birds, ii, p. 34 (1890).

a-d. 2 ♂, 2 ♀. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. March 22nd-28th. [Nos. 309, 310, 314, 493.]

"Iris hazel; bill black, feet purplish flesh."

Great confusion has arisen over the classification of this obscure species, which stands on the border line between the two great families *Muscicapidae* and *Laniidae*, and as the brief synonymy shows, it has been referred to several genera. The present form, however, seems to be congeneric with *Rhinomyias* rather than with either *Siphia* or *Anthipes*, from which it departs widely both in the characters of the bill and in the type of colouration. On the whole the affinities are strongly Muscipine.

As regards the specific position of the series before us there is not the slightest doubt that they are extremely closely allied to *Cyornis olivacea*, Hume, Stray. Feath. v, p. 338 (1877), from the extreme south of Tenasserim, of which we possess a series from Bandon in the north of the Malay Peninsula, only a hundred miles or so away. The Sumatran specimens differ from these in being slightly smaller, in having the cineraceous colour of the cap more clearly defined from the rest of the upper surface, which is decidedly less bright in tint, especially on the upper tail coverts and tail; the fuscous pectoral band is less buffy in tint, and the edges of the primaries are less ferruginous.



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1. *DICAËUM BECCARII*. Robinson & Kloss.
2. *CRYPTOLOPHA SUMATRENSIS*. Robinson & Kloss.
3. *CRYPTOLOPHA MUELLERI*. Robinson & Kloss.
4. *CETTIA MONTANA*. (Horsf.).

Our specimens agree sufficiently well with Salvadori's diagnosis of his *Hyloterpe brunneicauda*, obtained at Ayer Manchior in Padang and we have therefore referred it to that form, which we regard merely as a subspecies of "*Siphia olivacea*" (Hume.) Salvadori however gives the length of tarsus of his single specimen as 21 mm., while our four average 17.8 mm. only.

87. *Culicicapa ceylonensis* (Swains.).

Culicicapa ceylonensis (Swains.); Sharpe, Cat. Birds Brit. Mus. iv, p. 369 (1879); Nicholson, Ibis, 1883, p. 245; Vorderman, op. cit. p. 397, no. 156; Salvad. Ann. Mus. Civ. Gen. ser. 2a. xii, p. 52 (1891); Robinson, Journ. Fed. Malay States Mus. ii, p. 190 (1909).

- a. ♀. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 17th March. [No. 212.]
- b-g. 3 ♂, 3 ♀. Sungei Kumbang, Korinchi, Sumatra, 4,600 feet. 2nd-19th April. [Nos. 567, 712, 850, 1027-8, 1030.]
- h. ♂. Korinchi Peak, Sumatra, 7,300 feet. 10th May. [No. 1520.]
- i. ♂. Barong Bharu, Barisan Range, West Sumatra. Lat. 2° S. 4,000 feet. 6th June. [No. 1929.]

"Iris hazel, brown or chestnut, bill black or corneous, pinkish beneath at base, feet yellowish brown."

Fairly common in old forest from the floor of the valley up to about 4,500 feet, where it was fairly abundant, after that thinning out to 7,000 feet, above which it was not met with.

Found singly or in pairs in the undergrowth and lower branches of trees but not a scrub species in the way of *Phyllergates c. sumatranus*.

We can distinguish no differences whatever between our series from the Malay Peninsula and the Sumatran specimens. The species, which is one of the most wide spread of Oriental Flycatchers, ranging from Bombay to Bali, seem extraordinarily stable, though it is a resident bird wherever found. Stresemann notes that the Malayan specimens average smaller than those from Ceylon and Sikkim but the figures he gives are not very convincing (Nov. Zool. xx, p. 253 (1913)). The wing measurement of our Sumatran series ranges from 55-63 mm.

88. *Cryptolopha sumatrensis*, Robinson and Kloss. (Plate VII, fig. 2).

Cryptolopha sumatrensis, Robinson and Kloss, Journ. Straits Branch Roy. Asiat. Soc., no. 73, p. 277 (1916).

Closely allied to *Cryptolopha grammiceps* (Strickl.), of Java, from which it differs in having the mantle and back clear

grey, not light, ashy brown, and in the absence of the white rump, which is uniform with the lower back.

Adult male.—(Type No. 538). Head deep chestnut, a black stripe from the hinder margin of the eye, broadening posteriorly and coalescing on the nape; lores, ear coverts, cheeks and sides of the head rufous brown, mottled with black on the lores and anterior ear coverts. Mantle, scapulars, back and upper tail coverts clear grey; wing coverts dark fuscous, broadly edged with green, the lesser and greater series tipped with bright yellow, forming a double wing bar. Primaries and secondaries dark fuscous brown, broadly edged with green on the outer webs and internally edged with white on the inner webs. Tail feathers as the primaries, narrowly edged with green on the outer webs and with no trace of white edgings. Under wing coverts, axillaries and angle of wing bright yellow; thighs mingled greenish brown and bright yellow; under tail coverts white. Whole undersurface pure white except the throat and fore breast, which are washed with cinnamon. "Iris brown, bill yellowish, brighter beneath; tarsi purplish, soles yellowish." [No. 528.]

Dimensions in flesh.—Total length, 107; wing, 54; tail, 48; bill from gape, 12.5, tarsus, 17.5 mm.

Adult female.—(Type No. 529). Does not differ appreciably from the male.

"Iris hazel, bill horn, lower mandible yellow; tarsi pinkish, soles yellowish." Total length, 107; wing, 52; tail, 43; bill from gape, 12.5; tarsus, 18.

Immature birds have the colours much duller, the crown of the head being earthy brown, the yellow wing-bars are less distinct and the grey of the mantle and back less pure and often tinged with green.

The large series, listed below, presents certain variations *inter se*, notably in the extent and strength of tint of the cinnamon wash on the throat, which in some specimens is very much stronger than in those selected as types. Others have the flanks and under tail coverts slightly tinged with yellow.

a-b. ♂, ♀. Sungei Kumbang, Korinchi, Sumatra, 4,600 feet. 31st March-1st April. [Nos. 529, 538.] Types of the species.

c-p. 4 ♂, 1 ♂ imm., 8 ♀, 1 ♀ imm. Sungei Kumbang, Korinchi, Sumatra, 4,600 feet. 31st March-18th April. [Nos. 530, 533, 564, 613, 626, 645, 715, 737, 772, 818-9, 973, 989, 1007.]

p-r. ♂ imm, 2 ♀. Korinchi Peak, Sumatra, 7,300 feet. 26th April-13th May. [Nos. 1182, 1265, 1516.]

89. *Cryptolopha muelleri*, Robinson and Kloss. (Plate VII, fig. 3).

Cryptolopha muelleri, Robinson and Kloss, Journ. Straits Branch Roy. Asiat. Soc., no. 73, p. 278 (1916).

Adult male.—In general appearance resembling the preceding species but differing in having the rump, sides of the body and under tail coverts bright sulphur yellow, the scapulars and lower back olive green and the outer tail feathers edged and tipped with white. In these particulars it resembles *C. castaneiceps* (Hodgs.) of the Himalayas, from which it is separated by the cinnamon chestnut of the lores, sides of the head and ear coverts, which are white or grey in that species. Bill in dried skin, pale yellow, the culmen dark horn; feet yellowish green.

Total length: 98; wing, 53; tail 41, bill from gape, 13; tarsus, 18 mm.

- a.* ♂ ad. Barong Bharu, Barisan Range, West Sumatra. Lat. 2° S. 4,000 feet. June 8th. [No. 2088.] Type of the species.

This specimen was collected by a detached party on the western slopes of the mountains bounding the Korinchi Valley. Its distinctness from the Korinchi species was unfortunately not recognised at the time, so no special effort was made to obtain more, though it was reported to be not uncommon in the locality. It is dedicated to Salomon Müller, the famous Dutch collector-naturalist, who in his time did so much to elucidate the fauna of Netherlands India, especially Sumatra, Borneo and New Guinea.

90. *Cryptolopha trivirgata* (Strickl.).

Cryptolopha trivirgata, Salvad. Ann. Mus. Civ. Gen. xiv, p. 204 (1879); Sharpe, Cat. Birds Brit. Mus. iv, p. 396 (1879); Vorderman, op. cit. p. 397, no. 171 (Sunda Islands to Bali and Sumbawa; ? Borneo).

Phylloscopus trivirgatus parvirostris, Stresemann, Nov. Zool. xix, p. 322 (1912); Malay Peninsula.

- a-d.* ♂. Sungei Kumbang, Korinchi, Sumatra, 4,600 feet. 3rd-20th April. [Nos. 616, 619-20, 1056.]

- e-s.* 8 ♂, ♂ imm.; 4 ♀, ♀ imm. Korinchi Peak, Sumatra, 7,000-8,000 feet. 24th April-14th May. [Nos. 1110, 1153, 1181, 1207, 1228, 1281, 1298, 1315-6, 1501-3, 1512, 1517, 1548.]

- t-d'.* 8 ♂, 2 ♀, ♀ imm. Korinchi Peak, Sumatra, 10,000-10,500 feet. 27th April-12th May. [Nos. 1201, 1205-6, 1346-7, 1369, 1415, 1461, 1467, 1475, 1497.]

e'-f'. ♂ ♀. Barong Bbaru, Barisan Range, West Sumatra, Lat. 2° S. 4,000 feet. 4th-11th June. [Nos. 1950, 1985.]

"Iris hazel, bill black, base of lower mandible paler, feet pale slate."

On comparing this large series from Sumatra with examples of *C. t. parvirostris*, from the Malay Peninsula, including specimens from the typical locality, Gunong Tahan, we can detect no differences whatever in colouration. As stated by Stresemann, however, the wing of the continental form is smaller, not exceeding 56 mm., while that of the Sumatran specimens is usually 58-59 in adult males. *C. t. parvirostris* must therefore be regarded as confined to the Malay Peninsula.

91. *Abrornis superciliaris* subsp. *schwaneri* (Blyth).

Cryptolopha schwaneri (Blyth); Sharpe, Cat. Birds Brit. Mus. iv, p. 403 (1879); id. Ibis, 1889, p. 203, Pl. viii, fig. 2; id. in Whitehead, Explor. Kinabalu, p. 214 (1893).

Abrornis schwaneri, Robinson, Journ. Fed. Malay States Mus. ii, p. 191 (1909).

Abrornis superciliaris, Finsch, Notes Leyden Mus. xxvi, p. 63 (1905); (Borneo and Java).

a. ♂. Sungei Penoh, Korinchi Valley, Sumatra, 2,600 feet. 12th March. [No. 80.]

b-c. ♂ ♀. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. May 27th. [Nos. 1693, 1697.]

"Iris hazel or dark, bill slate or black, grey beneath, yellowish at gape, feet olive brown or greenish slate."

Obtained among bamboos in the vicinity of cultivation.

Excluding the anomalous *A. sakaiaorum*, Stresemann (Bull. B. O. C. xxxi, p. 27 (1912)), from the mountains of the Malay Peninsula, whose real position is doubtful, there are three races of this species, all very closely allied.

A. superciliaris superciliaris (Tickell.), Eastern Himalayas to Tenasserim.

A. superciliaris schwaneri (Blyth), Malay Peninsula, throughout Borneo and Sumatra (?).

A. superciliaris vordermani (Buttik.), Java.

The two former differ only in the colour of the lores, which is described as brownish in the Himalayan race, whilst it is ashy grey in that from the Malay Peninsula and Borneo. The three Sumatran specimens appear to be slightly darker green above and two of them entirely lack the yellow tips to the feathers of the rump and upper tail coverts, present in Bornean and Malayan specimens. The yellow is, however, slightly indicated in a third skin, so for the present we prefer

to leave the Sumatran race un-named. *A. s. vordermani* is described by Buttkofer (Notes Leyden Museum, xv, p. 260 (1893)), as having only the anterior half of the crown grey; this, however, is contradicted by Finsch, (*op. cit.* xxvi, p. 62), who regards all three forms as being absolutely identical.

The species has not hitherto been recorded from Sumatra.

92. *Stoparola indigo* subsp. *ruficrissa*, Salvad.

Stoparola ruficrissa, Salvad. Ann. Mus. Civ. Gen. xix, p. 202 (1879); *id. op. cit.* ser. 2a, xii, p. 50 (1891).

a-f. 8 ♂, 2 ♂ imm.; 4 ♀, 2 ♀ imm. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 17th-27th March. [Nos. 184, 267, 271-2, 296, 328, 342-5, 387, 469, 471-3, 1599, 1604.]

q-a'. 5 ♂; 5 ♀; ♀ imm. Sungei Kumbang, Korinchi, Sumatra, 4,600 feet. 31st March-1st April, 12th May. [Nos. 528, 561, 585, 607, 637, 794, 812, 913-4, 1082, 1573.]

l'-i'. 6 ♂, 2 ♀. Korinchi Peak, 7,300 feet. 24th April-11th May. [Nos. 1107, 1148-9, 1235-6, 1255, 1495-6.]

j'-n'. 4 ♂, ♀. Barong Bharu, Barisan Range, West Sumatra, Lat. 2° S. 4,000 feet. 5th-10th June. [Nos. 1915, 1931, 1958, 1969, 1983.]

"Iris hazel or dark brown; bill black, feet black, often with a purplish tinge."

A forest bird, not found in secondary jungle or open country; exceedingly abundant in Korinchi up to about 7,000 feet on the Peak, above which it was replaced by *Niltava sumatrana*.

It was very tame and inquisitive in its habits and in the morning and evening two or three pairs were always to be found in our camp clearing at Sungei Kumbang, perching on projecting twigs and creeping about amongst the felled timber and tangled vegetation. The note was a low whistle or chirp.

The species seems sufficiently distinct both from *S. indigo* of Java and *S. cerviniventris* of Kinabalu, North Borneo. Fully adult specimens always having the under tail-coverts deep rufous and the belly white without any tinge of fawn, though in younger specimens the under tail-coverts are paler, the belly often faintly tinged with buff, the blue of the upper surface duller, without the shining blue forehead and superciliaries and the feathers of the breast faintly tipped with buffy white. Salvadori (*loc. cit.*) states that there is no appreciable difference between the sexes but in the series before us these can almost always be separated by the colour of the upper surface, which is a pure cobalt or indigo blue in the male, but everywhere less intense in the female.

93. *Stoparola thalassinoides* (Cab.).

Stoparola thalassinoides (Cab.), Sharpe, Cat. Birds Brit. Mus. iv, p. 439 (1879); Buttikofer Notes Leyden Mus. ix, p. 45 (1887); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 397, no. 152 (1889); Robinson, Journ. Fed. Malay States Mus. ii, p. 191 (1909); Robinson & Kloss, Ibis, 1911, p. 54.

a. ♀ imm. Sungei Penoh, Korinchi Valley, Sumatra, 2,600 feet. 12th March, 1914. [No. 79.]

b-f. 4 ♂, 1 ♀. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 16th-19th March, 1914. [Nos. 182, 220, 227, 249, 270.]

"Iris hazel, bill black, feet black or slaty black."

Sparingly distributed singly or in pairs over the lower parts of the valley.

The above series and a considerable number of skins from the Malay Peninsula show that the differences between the sexes are trifling and not very constant, the males being more silvery blue than the females. Young birds are much duller and have the lower surface obscurely barred with greyish and the throat mottled with dirty white.

94. *Artamides melanocephalus* (Salvad.).

Graucalus melanocephalus, Salvad. Ann. Mus. Civ. Gen. xiv, p. 206 (1879); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 398, no. 198 (1889).

a. 1 ♀ imm. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 19th March, 1914. [No. 260.]

b. 1 ♀ imm. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. 4th April, 1914. [No. 651.]

c-i. 2 ♂ ad., 2 ♂ imm., 1 ♀ ad., 2 ♀ vix. ad. Korinchi Peak, Sumatra, 7,300 feet. 26th April-12th May, 1914. [Nos. 1164, 1225, 1227, 1237, 1285, 1492, 1500.]

"Iris white, red, rich brown or dark hazel, bill black, feet black or slaty black."

This Caterpillar-shrike was rare in the neighbourhood of Siolak Daras and Sungei Kumbang, but was commoner on the lower slopes of the Peak between 6,000 feet and 7,500 feet, frequenting lofty trees in pairs or small parties of three or four.

This species does not appear to have been obtained since Beccari secured the two original specimens, which were both males, on Mt. Singgalang in the Padang highlands, though we have lately seen a pair obtained in the Deli Dist., N. E. Sumatra, by Mr. A. Van Heyst.

The female resembles the male, but the grey colour throughout is slightly paler and the crown, nape, throat and

upper breast are dark grey and not glossy black. Young males are like the females, and young birds of both sexes have the under wing coverts and axillaries obscurely barred with black and grey and the under tail coverts with whitish edges and darker grey subterminal borders. In fully adult birds of both sexes the under wing coverts and axillaries are apparently uniform grey.

The species is very closely allied to *Artamides normani*, Sharpe, from Kinabalu, North Borneo (Ibis, 1887, p. 438; id. op. cit. 1888, p. 190), and the females are probably almost indistinguishable. The Kinabalu bird, however, has the crown and nape of the male grey like the rest of the plumage and not glossy black as in the present species.

95. *Pericrocotus xanthogaster* (Raffles).

Lanius xanthogaster, Raffles, Trans. Linn. Soc. xiii, p. 309 (1822.)

Pericrocotus xanthogaster, Sharpe, Stray. Feath. iv, p. 208 (1876); Tweedd. Ibis, 1877, p. 315; Sharpe, Cat. Birds Brit. Mus. iv, p. 74 (1879); Nicholson, Ibis, 1883, p. 246; Buttkofer, Notes Leyd. Mus. ix, p. 46 (1887.)

Pericrocotus ardens, Bp. Consp. i, p. 357; Hume, Stray Feath. v, p. 196 (1877).

Pericrocotus subardens, Hume, Stray Feath. v, p. 196 (1877).

a-f. 2 ♂ ad., 2 ♀ ad., 2 ♂ imm. Sungei Penoh, Korinchi Valley, Sumatra, 2,600 feet. 10th-12th March, 1913. [Nos. 25-27, 74-76.]

g, h. 2 ♂ ad. Sandaran Agong, Korinchi Valley, Sumatra, 3,450 feet. 27th May, 1913. [Nos. 1695, 1703.]

"Iris dark hazel, bill and feet black, or slaty black."

The females in this series, which are possibly not quite adult, agree sufficiently well with the original description by Raffles, whose specimens probably came from Bencoolen, about a hundred miles to the south of the present locality.

Compared with four specimens from Sarawak, no differences can be detected except a slight superiority in size of the bills of the Bornean specimens.

Fairly common at Sungei Penoh and Sandaran Agong, but replaced at higher elevations by *P. montanus* and *P. miniatus*.

The range of this species is not well made out, but from the series in the F. M. S. Museum it would appear that it is found in the southern half of the Malay Peninsula as well as in Sumatra and Borneo. Males are almost indistinguishable from those of *P. flammifer*,¹ except by a slightly smaller average size. Females, however, seem to differ by the more olive tint of the yellow of the rump and upper tail coverts and the

¹ Hume, Stray Feath. III, p. 320 (1875) (South Tenasserim).

undersurface, and by the less extent of the yellow on the forehead. Very few female specimens are however available from the southern parts of the Malay Peninsula, and it should be noted that the characters mentioned are precisely those that differentiate immature specimens of *P. montanus* from the adult females. Of the two males shot at Sungei Penoh on the same day one has the greater part of both webs of the central pair of tail feathers black, thus approaching *P. andamanensis*, than which species, however, it is decidedly smaller.

96. *Pericrocotus montanus*, Salvad.

Pericrocotus montanus, Salvad. Ann. Mus. Civ. Gen. xiv, p. 205 (1879); Sharpe, Ibis, 1889, p. 193; id. op. cit. 1892, p. 435; Vorderman, Nat. Tijds. Nederl. Ind. xlix, p. 398, no. 180 (1889); Salvad. Ann. Mus. Civ. Gen. (2) xii, p. 54 (1891); Hartert, Nov. Zool. ix, p. 554 (1902); Ogilvie Grant, Fascic. Malay. Zool. iii, p. 91 (1905); id. Journ. Fed. Malay States Mus. iii, p. 34 (1908); Robinson, op. cit. ii, p. 192 (1909); id. Hand-list Birds Malay Penins. p. 14, no. 391 (1910); id. Journ. Fed. Malay States Mus. vi, p. 33 (1915).

Pericrocotus cinereigula, Sharpe, Ibis, 1889, p. 192; Whitehead, Exploration, Kinabalu, plate to p. 40 (1893).

Pericrocotus wrayi, Sharpe, P. Z. S. 1888, p. 269, pl. xv.

Pericrocotus croceus, Sharpe, P. Z. S. 1888, p. 269; Bonhote, P. Z. S. (i) 1901, p. 60. Ogilvie Grant, Fascic. Malay. Zool. iii, p. 91 (1905).

- a. 1 ♂. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 16th March, 1914. [No. 157.]
- b-i. 5 ♂, 3 ♀. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. 1st-17th April, 1914. [Nos. 534, 609, 727, 767, 817, 831, 981-2.]
- j-l. 1 ♂, 2 ♀. Barong Bharu, Barisan Range, W. Sumatra, Lat. 2° S. 4,000 feet. 5th-11th June, 1914. [Nos. 1901, 1989-90.]

"Iris dark hazle, bill and feet black."

Fairly common round Sungei Kumbang, in habits similar to the other species.

The three species of *Pericrocotus* in Korinchi seems to have fairly well defined zones in altitude. *P. zanthogaster*, being the valley form, ranging from the low country up to about 3,000 feet, where it is replaced by *P. montanus* up to 5,000 feet, above which up to 8,000 feet, *P. miniatus* is the only one found.

This series seems fairly uniform and does not include males with very pale grey throats, which occur in Bornean and Malayan collections, being the variant on which Sharpe founded his *P. cinereigula*.

97. *Pericrocotus miniatus* (Temm.).

Pericrocotus miniatus (Temm.); Sharpe, Cat. Birds Brit. Mus. iv, p. 80 (1879); Meyer, Sitzungsberichte, Isis, 1884, p. 26; Van Oort, Notes Leyden Mus. xxxii, p. 150 (1910).

a-d. 1 ♂, 1 ♂ imm., 1 ♀. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. 8th-22nd April, 1914. [Nos. 750, 941, 1083, 1564.]

e-u. 8 ♂, 10 ♀. Korinchi Peak, Sumatra, 7,300 feet. 23rd April-15th May, 1914. [Nos. 1090, 1101-2, 1146, 1170, 1183, 1194, 1223-4, 1246, 1299, 1430, 1489, 1525, 1535-6, 1547.]

v-e. 5 ♂, 1 ♂ imm., 4 ♀. Barong Bharu, Barisan Range, West Sumatra, Lat. 2° S. 4,000 feet. 4th-10th June, 1914. [Nos. 1906, 1926, 1935, 1952, 1954, 1956, 1970-1, 1986, 1988.]

"Iris dark or dark hazel, bill black, feet black or slaty black."

These specimens are very uniform sex for sex, and agree well with Sharpe's description, except that the centre tail feathers in the male are without exception entirely black and not "slightly edged and spotted at the tip with vermilion." Sharpe, however, had only very limited material from West Java and had not seen specimens from Sumatra, which locality is only recorded by Meyer, to whose record we have not access.

This species was rare below about 5,000 feet, but was very common indeed between 6,000 and 8,000 feet, though it did not extend to the limit of forest vegetation at 10,000 feet, approximately. It occurred singly and in small flocks and usually kept near the tops of the trees, being very restless in its habits.

98. *Lalage fimbriata* subsp. *culminata* (Hay).

Lalage culminata (Hay); Sharpe, Cat. Birds Brit. Mus. iv, p. 104 (1879); Buttikofer, Notes Leyden Mus. ix, p. 47 (1887).

Volvocivora fimbriata, Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 398, no. 181 (1889).

a. 1 ♀ ad. Siolak Daras, Korinchi Valley, Sumatra, 26th March, 1914. [No. 438.]

"Iris red, bill and feet black."

This single specimen agrees well with others of the same sex from the south of the Malay Peninsula.

99. *Lalage terat* (Bodd.).

Lalage dominica (P. L. S. Müll.); Tweedd. Ibis, 1877, p. 313.

Lalage terat (Bodd.); Salvad. Ann. Mus. Civ. Gen. xii, p. 206 (1879); Buttikofer, Notes Leyden Mus. ix, p. 47

(1887); Sharpe, Cat. Birds Brit. Mus. iv, p. 95 (1879); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 398, no. 185 (1889); Salvad. Ann. Mus. Civ. Gen. (2) xii, p. 53 (1891); Parrot, Abh. Konigl. Bayer. Akad der Wissensch. II, Kl. XXIV, Bd. I, p. 227 (1907).

a. 1 ♀. Sungei Penoh, Korinchi Valley, Sumatra, 2,600 feet. 10th March, 1914. [No. 32.]

"Iris hazel, bill and feet black."

Occasionally seen on open grassy spaces and in gardens, but by no means common.

100. *Chloropsis media* (Bp.).

Phyllornis media, Bp. Consp. Av. 1, p. 396 (1850); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 402, no. 246 (1889).

Chloropsis media (Bp.); Sharpe, tom. cit. p. 27; Buttikofer, Notes Leyden Mus. ix, p. 59 (1887); Salvad. Ann. Mus. Civ. Gen. (2) xii, p. 59 (1891).

a-b. 2 ♂. Sungei Penoh, Korinchi Valley, Sumatra, 2,600 feet. 10th-12th March, 1914. [Nos. 34, 77.]

c-q. 6 ♂, 2 ♂ imm., 7 ♀. Siolak Daras, Korinchi Valley, Sumatra, 14th March-19th May, 1914. [Nos. 96, 100, 133-4, 160, 167, 200, 301, 346-8, 485, 486, 1594-5.]

r-y. 4 ♂, 3 ♀. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 24th May-1st June. [Nos. 1629-30, 1688, 1801-2, 1821-2.]

"Iris brown or chestnut, bill black, feet Paynes Grey, soles yellowish."

Fairly common in secondary jungle and on isolated trees in the middle of rice fields and in gardens, but not found in old jungle. Generally met with in pairs or in small parties of five or six.

The series is fairly uniform, but old males have the yellow carried round the black gorget as a more or less defined outer collar. Adult females have the forehead yellow as in the males, not green, as stated by Sharpe, those with green heads being young birds.

The species is apparently confined to medium altitudes in Sumatra as it does not occur in the Lampongs or in the Deli and Medan districts of eastern Sumatra.

101. *Chloropsis venusta* (Bp.).

Phyllornis venusta, Bp. Consp. Av. 1, p. 396 (1850); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 402, no. 249 (1889).

Chloropsis venusta (Bp.); Sharpe, Cat. Birds Brit. Mus. vi, p. 34 (1884); Buttikofer, Notes Leyden Mus. ix, p. 60 (1887); Salvad. Ann. Mus. Civ. Gen. (2) xii, p. 59 (1891).

a-b. 1♂, 1♀. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 16th March, 1914.
[Nos. 173, 174.]

The only pair seen.

This extremely rare Green Bulbul, one of the handsomest of its genus, is to the best of our knowledge only known from the three types in the Leyden Museum, two of the typical series in the Liverpool Museum, six collected by Modigliani in the Battak Highlands and two males from the Padang Highlands, collected by Klaesi.

Irena puella subsp. *crinigera*, Sharpe.

Coracias puella, Raffles (nec. Latham), Trans. Linn. Soc. xiii, p. 302 (1822).

Irena cyanea, Salvad (nec. Begbie), Ann. Mus. Civ. Gen. xiv, p. 207 (1879).

Irena puella, Snelleman in Veth's Midden-Sumatra Exped. Vogels, iv, p. 42 (1884).

Irena crinigera, Sharpe, Cat. Birds Brit. Mus. iii, p. 267 (1877); Nicholson, Ibis, 1882, p. 60; Buttikofer, Notes Leyden Mus. ix, p. 47 (1887); Stone, Proc. Acad. Nat. Sci. Philad. liv, p. 682; Hartert, Nov. Zool. ix, p. 212 (1902).

Irena puella turcosa, Walden; Parrot, Abh. Königl. Akad. Bayer. II, xxiv, Bd. I, p. 246 (1907).

a-b. 1♂ ad., 1♂ vix. ad. Pasir Ganting, West Sumatran Coast, Lat. 2° S. 19th June.
[Nos. 2023, 2024.]

"Iris carmine, bill and feet black."

We can say with some certainty that this species does not occur in the Korinchi Valley, though, judging by the very large number secured by Klaesi in the Padang Highlands to the north of Korinchi Peak, it is extraordinarily abundant there.

The four nominal species of this genus occurring outside the Philippine group are extremely closely allied and constitute but slightly differentiated races. It is impossible to pick out by the tint of the blue of the upper surface specimens of *I. puella*, *I. cyanea* and *I. criniger*, when considerable series of these forms are mixed, and as the synonymy shows, the Sumatran bird has at different times been referred to each of the four races. The length of the upper and lower tail coverts which in fully adult West Sumatran males seem always to reach the extreme tip of the tail is the only character by which they can be separated from the Malayan *I. puella* and *I. cyanea*. Buttikofer, however, states that birds from Deli in

east Sumatra are to be referred to *I. cyanea*. In the absence of specimens from Java we are unable to say in what respect *I. criniger* differs from *I. turcosa*, and even Sharpe was apparently unable to bring out any diagnostic characters. The dimensions are certainly identical and some mistake has occurred in those given in the Catalogue of Birds.

102 *Hemixus sumatranus*, Wardl. Rams.

Hypsipetes malaccensis, Salvad. Ann. Mus. Civ. Gen. xiv, p. 221 (1879); Vorderman, Nat. Tijds. Nederl. Ind. xlix, p. 403, no. 279 (1889).

Hemixus malaccensis, Buttkofer, Notes Leyden Mus. xxi, p. 226 (1899); Finsch. op. cit. xxvi, p. 101 (1905).

Hemixus sumatranus, Wardl. Rams. Ann. & Mag. Nat. Hist. (5) x, p. 431 (1882); Nicholson Ibis, 1883, p. 246; Salvad. Ann. Mus. Civ. Gen. (2) v, p. 525 (1888); Vorderman, loc. cit. p. 403, no. 260 (1889).

Criniger striolatus, Vorderman, loc. cit., p. 403, no. 279 (1889).

Hemixus striolatus, Salvad. Ann. Mus. Civ. Gen. (2) xii, p. 61 (1891).

a-k. 4 ♂, 7 ♀. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 14th-20th March, 1914. [Nos. 99, 138-9, 159, 238, 255, 297, 329, 351, 453, 482.]

l-w. 5, 7. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. 3rd April-13th May, 1914. [Nos. 602-3, 624, 746-7, 759-60, 789, 880, 924, 1024, 1575.]

x-a'. 2 ♂, 2 ♀. Korinchi Peak, Sumatra, 7,300 feet. 26th April-13th May, 1914. [Nos. 1166, 1486-7, 1515.]

b'-c'. 2 ♀. Barong Bharu, Barisan Range, West Sumatra, Lat. 2° S. 4,000 feet. 7th-11th June, 1914. [Nos. 1914, 1975.]

"Iris red, carmine, chestnut or chocolate, bill black to dark horn, feet brownish, pinkish or purplish brown."

Exceedingly common on the lower slopes of the main Korinchi Valley, where the original forest had been destroyed and replaced by secondary jungle of smaller trees; not so common but still abundant in heavy forest on the lower slopes of the Peak, disappearing entirely above about 7,300 feet.

In habits like those of the other members of the family, being met with in pairs or parties of three or four among bushes or on the lower branches of small trees. In diet mainly frugivorous but like nearly all birds exceedingly fond of termites in the flying stage.

Much confusion has surrounded this species which, by many authors, has been confounded with *H. malaccensis* from the Malay Peninsula, a totally distinct form, differing in its very much larger size, wing about 104 against 87 mm., and in its much whiter lower surface, the belly having no tinge of yellow, while the feathers of the breast are white, edged with greyish brown, instead of ochreous brown, with shaft stripes of white.

Salomon Müller utilized the specific name *striolata* for two species, of which one is the present species, while the second is a *Thringorhina* (c. f. *postea*).

Buttikofer however (Notes Leyden Museum, xxi, p. 226) categorically states that "all our Sumatran specimens in the Leyden Museum, with the inclusion of the types of *Trichophorus striolatus* certainly belong to this latter species, *H. malaccensis*, as they cannot be distinguished from Malaccan and Bornean specimens," and in face of this, we have no option but to regard *T. striolata* described in 1850 as a pure synonym of *H. malaccensis* described in 1845, though Bonaparte's epithet of "nigricans" hardly fits the bird.

Both *Hemixus malaccensis* and *H. sumatranus* therefore occur on Mt. Singgalang, while *H. malaccensis* occurs to the North of Korinchi Peak, and *H. sumatranus* to the south of it in the Lampong district and also north in the Batak Lands. But for the fact that Klaesi's birds are *H. malaccensis* one might suspect erroneous labelling of the types of *H. striolata*.

***Microtarsus melanoleucus*, Eyton.**

Microtarsus melanoleucus, Eyton, P.Z.S. 1889, p. 102; Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 403, no. 262 (1889).

Micropus melanoleucus (Eyton,) Sharpe, Cat. Birds Brit. Mus. vi, p. 69 (1881); Buttikofer, Notes Leyden Mus. ix, p. 63 (1887).

a. 1 ♂. Pasir Ganting, West Sumatran Coast.
Lat. 2° S. 19th June, 1914. [No. 2034.]

"Iris red, bill and feet slaty black."

103. *Gymnocrotaphus tygus* (Bp.).

Pycnonotus tygus, Sharpe, tom. cit. p. 156.

Gymnocrotaphus tygus, Buttikofer, Notes Leyden Mus. xvii, p. 245 (1896).

a.d. 3 ♂, ♀. Siolak Daras, Korinchi Valley, Sumatra,
3,000 feet. 17th-27th March. [Nos. 194,
252, 269, 467.]

"Iris hazel, orbital skin dark greenish black, bill black; feet brownish, slaty black or black."

The characters cited by Buttikofer, especially the naked orbital region, appear sufficient to separate this species generically from *Pycnonotus*. We have nothing special to note

about its habits, our collectors reporting that the specimens obtained were shot in secondary scrub on steep hillsides. It appears to be rare, as we can find no record of any specimens except the original series obtained by Müller in 1833-5.

104. *Alcurus leucogrammicus* (S. Müll.).

Pycnonotus leucogrammicus, S. Müller; Sharpe, tom. cit. p. 152.

Ixidia leucogrammica, Wardl. Rams. P. Z. S. 1880, p. 15.

Alcurus leucogrammicus, Buttikofer, Notes, Leyden. Mus. xvii, p. 246 (1896).

a-f. 3 ♂, 3 ♀. Siolak Daras, Korinchi Valley,
Sumatra, 3,000 feet. 14th-24th March.
[Nos. 97, 98, 237, 349, 350, 385.]

"Iris bright orange; bill black, slate at base; feet brownish or greenish black."

The habits of this bird are similar to those of the preceding species and like it, it seems equally rare in collections, Carl Bock having been the only collector who has secured it since S. Müller. We have followed Buttikofer in placing it with *Alcurus* rather than in *Pycnonotus*, from which it is at once separated by the type of coloration.

***Micropus melanocephalus* (Gm.).**

Turdus melanocephalus, Raffles, Trans. Linn. Soc. xiii, p. 310 (1822).

Brachypodius melanocephalus, Tweedd. Ibis, 1877, p. 307; Salvad. Ann. Mus. Civ. Gen. xiv, p. 221 (1879); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 403, no. 267 (1889).

Micropus melanocephalus, Sharpe, Cat. Birds Brit. Mus. vi, p. 65 (1811); Buttikofer, Notes Leyden Mus. ix, p. 63 (1887).

Microtarsus melanocephalus melanocephalus, Parrot, Abh. Konigl. Akad. Bayer. der Wissensch. ii, Kl. xxiv, Bd. I. p. 240 (1907).

a, b. 1 ♂, 1 ♀. Pasir Ganting, West Sumatran
Coast, Lat. 2° S. 19th-21st June, 1914.
[Nos. 2032, 2075.]

"Iris blue, bill black, feet slaty black."

Common in small flocks on large fig trees in fruit.

105. *Criniger sumatranus*, Wardl. Rams.

Criniger sumatranus, Wardlaw Ramsay, Ann. & Mag. Nat. Hist. (5) x, p. 431 (1882).

a, b. ♂, ♀. Siolak Daras, Korinchi Valley, Sumatra,
3,000 feet. 15th-23rd March. [Nos. 141,
325.]

c-h. 3 ♂, 3 ♀. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. Sumatra, 26th May-5th June. [Nos. 1680, 1687, 1817-1819, 1871.]

"Iris chestnut, Indian red or red; bill slate, the culmen black; feet brown, generally with a pinkish tinge."

Allied to but quite distinct from *C. tephrogenys* (Jard. and Selby), of the Malay Peninsula, from which it differs in having the general colour beneath richer, with the white throat more sharply defined and in the darker olive green mantle and greyer cap, points already noted by Hartert (Nov. Zool. ix, p. 559).

This species was not common at Siolak Daras, but lower down the valley at Sandaran Agong was fairly abundant. Like its congeners, *C. tephrogenys* and *C. ochraceus* in the Malay Peninsula it is a denizen of scrub jungle and fairly open country. In the evening it was noted hawking after termites and other insects with a curious fluttering action of the wings, the elongated white feathers on the throat being very conspicuous.

106. *Trachycomus ochrocephalus* (Gm.).

Trachycomus ochrocephalus (Gm.); Salvad. Ann. Mus. Civ. Gen. xiv, p. 218 (1879); Sharpe, Cat. Birds Brit. Mus. vi, p. 93 (1881); Buttikofer, Notes Leyden Mus. ix, p. 60 (1887); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 402, no. 251 (1889); Salvad. Ann. Mus. Civ. Gen. (2) xii, p. 60 (1891); Hartert, Nov. Zool. ix, p. 210 (1902).

- a. 1 ♂. Sungei Penoh, Korinchi Valley, Sumatra, 2,700 feet. 9th March, 1914. [No. 3.]
- b. 1 ♂. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 10th March, 1914. [No. 263.]
- c. 1 ♂. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 24th May, 1914. [No. 1641.]
- d, e. 2 ♂. Pasir Ganting, West Sumatran Coast, Lat. 2° S. 18th-22nd June, 1914. [Nos. 2014, 2083.]

"Iris reddish, chestnut or chocolate, bill black, feet greenish slate to brownish black."

107. *Pycnonotus analis* (Horsf.).

Turdus analis, Horsf. Trans. Linn. Soc. xiii, p. 147 (1821). Raffles, tom. cit. p. 310 (1822).

Otocompsa personota, Hume, Stray Feathers, i, p. 457 (1873).

Ixus analis, Salvad. Ann. Mus. Civ. Gen. xiv, p. 219 (1879); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 403, no. 256 (1889).

Ixos psidii, Snelleman in Veth's Midden Sumatra Exped. Vogels, iv, p. 40 (1884).

Pycnonotus analis (Horsf.); Sharpe, Cat. Birds Brit. Mus. vi, p. 140 (1881); Buttikofer, Notes Leyden Mus. ix, p. 61 (1887); Salvad. Ann. Mus. Civ. Gen. (2) xii, p. 60 (1891); id. Bull. Mus. Zool. Turin, xi, p. 10 (1896); Stone, Proc. Acad. Nat. Sci. Philad. liv, p. 683 (1903).

Pycnonotus goiavier analis, Hartert, Nov. Zool. ix, p. 210 (1902); Parrot, Abh. Konigl. Akad. Bayer. der Wissensch. ii, Kl. xxiv, Bd. i, p. 238 (1907).

a. 1 ♂. Sungei Penoh, Korinchi Valley, Sumatra, 2,700 feet. 10th March, 1914. [No. 33.]

b, c. 1 ♂, 1 ♀. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 28th May-5th June, 1914. [Nos. 1713, 1870.]

d, e. 1 ♀, 1 ♀ imm. Pasir Ganting, West Sumatran Coast, Lat. 2° S. 18th-21st June, 1914. [Nos. 2001, 2072.]

"Iris dark hazel, bill black, feet black or greenish black."

The Yellow-vented Bulbul was fairly common in secondary jungle and waste land both in the Korinchi Valley and on the West Sumatran Coast, though it was never met with in primaeval forest. It was, however, not nearly so abundant as in the Malay Peninsula, where it is one of the commonest of garden birds.

Sumatran and Malay Peninsula birds differ in no respects.

108. *Pycnonotus bimaculatus* (Horsf.).

Turdus bimaculatus, Horsf. Trans. Linn. Soc. xiii, p. 147 (1821).

Ixus bimaculatus (Horsf.); Salvad. Ann. Mus. Civ. Gen. xiv, p. 218 (1879).

Coccyzus bimaculatus, Vorderman, Nat. Tijds. Nederl. Ind. xlix, p. 403, no. 255 (1889).

Pycnonotus bimaculatus, Sharpe, Cat. Birds Brit. Mus. vi, p. 138 (1881); Nicholson, Ibis, 1883, p. 247; Buttikofer, Notes Leyden Mus. ix, p. 61 (1887); Salvad. Ann. Mus. Civ. Gen. (2) xii, p. 60 (1891).

a-e. 3 ♂, 2 ♀. Sungei Penoh, Korinchi Valley, Sumatra, 2,700 feet. 9th-12th March, 1914. [Nos. 13, 14, 70-2.]

f-q. 4 ♂, 8 ♀. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 14th-27th March, 1914. [Nos. 95, 130, 135-7, 208, 268, 276, 290, 357, 377, 483.]

r-t. 1 ♂, 2 ♀. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. 12th-15th April, 1914. [Nos. 848, 917, 949.]

u-b'. 3 ♂, 6 ♀. Korinchi Peak, Sumatra, 10,000 feet. 29th April-9th May, 1914. [Nos. 1279, 1358, 1358a-9, 1357, 1451-4.]

"Iris ranging from hazel to chestnut, to brown or orange, bill black, feet black or brownish black."

In the whole of the Korinchi Valley, this species was exceedingly common in the brushwood and secondary jungle edging cultivation; on the sides of the valley in old jungle it was very much rarer, though a few were occasionally met with; on emerging on to the moorland zone at 10,000 feet and over it became very common, feeding on the *Vaccinium* berries and flying in small flocks of five or six. Whether it is a normal resident of these high altitudes we are, of course, unable to say, but Beccari collected it on Singgalang at over 5,000 feet. We can detect no differences between those collected in the valley and those from 10,000 feet, though Van Oort (Notes Leyden Mus. xxxiv, p. 46 (1911)), has described a subspecies, *Crocopsis bimaculatus tenggerensis*, from the Tengger Volcano in East Java, characterised by the diminished extent of the yellow area on the ear-coverts.

No such differences are perceptible between our high and low level birds, taken as a series, though there are individual variations in this character not correlated with locality, which are probably due to age. All our series, however, are fairly adult. A large series from Mt. Salak and Mt. Gede, W. Java, can be exactly matched by specimens in the above list.

***Pycnonotus plumosus*, Blyth.**

Pycnonotus plumosus, Blyth.,; Sharpe, Cat. Birds Brit. Mus. vi, p. 152 (1881); Nicholson, Ibis, 1883, p. 247; Parrot, Abh. Konigl. Akad. Bayern. der Wissensch. ii, Kl. xxiv, Bd. 1, p. 239 (1907).

Brachypus plumosus, Tweedd. Ibis, 1877, p. 306; Salvad. Ann. Mus. Civ. Gen. xiv, p. 220 (1879).

Ixos plumosus, Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 403, no. 257 (1889).

Laedorusa plumosa, Buttkofer, Notes Leyden Mus. xvii, p. 240 (1896).

a. Sex?. Pasir Ganting, West Sumatran Coast, Lat. 2° S. 19th June, 1914. [No. 2029.]

"Iris orange, bill black, feet brownish."

***Pycnonotus simplex*, Less.**

Pycnonotus simplex, Less. Rev. Zool. ii, p. 167 (1839).

Microtarsus olivaceus, Moore, in Horsf. & Moore, Cat. B. E. Ind. Co. i, p. 249 (1850).

Pycnonotus simplex, Sharpe, (partim), Cat. Birds Brit. Mus. vi, p. 153 (1881)¹; Nicholson, Ibis, 1882, p. 60; Oberholser, Bull. 98, U. S. Nat. Mus., p. 44 (1917).

Ixos simplex, Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 403, No. 258 (1889).

Laedorusa simplex, Buttkofer, Notes Leyden Mus. xvii, p. 240 (1896).

Pycnonotus species, Richmond, Proc. U. S. Nat. Mus. xxvi, p. 506 (1903).

Pycnonotus olivaceus chloeodis, Oberholser, Smithsonian Misc. Coll. 60, No. 7, p. 11 (1912).

a-b. 2 ♀. Pasir Ganting, West Sumatran Coast,
Lat. 2° S. 18th June, 1914. [Nos. 2002,
2003.]

"Iris white, bill pinkish horn, feet pinkish brown."

Oberholser's diagnosis of *P. olivaceus chloeodis*, which he has since reduced to a synonym of *P. simplex*, is "similar to *P. olivaceus olivaceus* (Moore) but larger; paler beneath and averaging darker above."

The type locality, Tapanuli Bay and Pasir Ganting are about 200 miles apart and our specimens may therefore be regarded with reasonable certainty as representing Oberholser's birds.

As regards colour distinctions our two specimens, compared with a series of "*olivaceus*" from the central and southern parts of the Malay Peninsula (the type locality being Malacca) do not support Mr. Oberholser's remarks, as we can perceive no differences whatever.

In dimensions the wings of our two Sumatran Birds are 76 and 77 mm., while the range in a dozen Malayan birds is from 76 to 81 mm., so that this evidence so far as it goes shows that the Sumatran bird does not differ in size from that of the mainland: *olivaceus*, therefore, is a synonym of *simplex*.

Fairly common in the Casuarinas and scrub edging the beach.

Rubigula dispar (Horsf.).

Turdus dispar, Horsf. Trans. Linn. Soc. xiii, p. 150; Raffles, tom. cit. p. 310 (1822).

Rubigula dispar (Horsf.); Tweedd. Ibis. 1877, p. 306; Salvad. Ann. Mus. Civ. Gen. xiv, p. 220; Buttkofer, Notes Leyden Mus. ix, p. 62 (1887); Sharpe, Cat. Birds Brit. Mus. vi, p. 167 (1881); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 403, no. 254 (1889); Parrot, Abh. Konigl. Bayer. Akad. der. Wissensch. ii, Kl. xxiv, Bd. I. p. 240 (1907).

¹ Sharpe's plate (IX) of *P. simplex* represents *P. prillwitzii*, Hartert (Nov. Zool. ix, p. 561 (1902)) of Java, which is a form of *P. brunneus*, Blyth, fide Oberholser, Bull. 98, U. S. Nat. Mus. p. 47 (1917).

a. 1 ♂. Pasir Ganting, W. coast of Sumatra, Lat.
2° S. 20th June, 1914. [No. 2066.]

"Iris Indian red, bill and feet greenish black."

The only one seen.

109. *Eupetes macrocerus*, Temm.

Eupetes macrocerus, Temm.; Salvad. Ann. Mus. Civ. Gen. xiv, p. 223 (1879); Sharpe, Cat. Birds Brit. Mus. vii, p. 338 (1883); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 410, no. 375 (1889); Buttikofer, Notes Leyden Mus. ix, p. 68 (1887); Parrot, Abh. Konigl. Akad. Bayer. II, xxiv, Bd. I, p. 245 (1907.)

a. 1 ♂. Sandaran Agong, Korinchi Valley, Sumatra,
2,450 feet. 2nd June, 1914. [No. 1843.]

"Iris hazel, skin on sides of neck lilac, bill black, feet slaty black."

A noisy and fairly common ground bird in scrub jungle, running and concealing itself with great rapidity at the least alarm.

110. *Pomatorhinus borneensis* (Cab.).

Pomatorhinus borneensis (Cab.); Sharpe, Cat. Birds Brit. Mus. vii, p. 411 (1883); Robinson, Journ. Fed. Malay States Mus. ii, p. 197 (1909).

a. 1 ♂. Sandaran Agong, Korinchi Valley, Sumatra,
2,450 feet. 1st June, 1914. [No. 1822.]

"Iris pale hazel, bill greenish horn, culmen darker, feet greenish slate."

This bird appears to differ in no material particular from specimens from the southern half of the Malay Peninsula, where the species is very common between 1,000 feet and 3,000 feet. It differs from the Javan race, *P. montanus*, Horsf., the mantle and flanks being more chocolate rufous and less ochraceous in tint and in its smaller size and greyer wings.

The genus has not hitherto been discovered in Sumatra.

111. *Garrulax bicolor*, Hartl.

Garrulax bicolor, Hartl.; Salvad. Ann. Mus. Civ. Gen. xiv, p. 229 (1879); Sharpe, Cat. Birds Brit. Mus. vii, p. 438 (1883); Nicholson, Ibis, 1883, p. 249; Snelleman in Veth's Midden-Sumatra Exped. Vogels, iv, p. 43 (1884); Buttikofer, Notes Leyden Mus. ix, p. 438 (1887); Vorderman, Nat. Tijd. Nederl. Ind. p. 405, no. 329 (1889); Salvadori, Ann. Mus. Civ. Gen. (2) xii, p. 65 (1891); Hartert, Nov. Zool. ix, p. 213 (1902); Stone, Proc. Acad. Nat. Sci. Philad. liv, p. 685 (1903).

Garrulax leucolophus bicolor, Parrot, Abh. Konigl. Akad. Bayer. II, xxiv., Bd. I, p. 248 (1907).

a-c. 1 ♂, 2 ♀. Sungei Penoh, Korinchi Valley,
Sumatra, 2,700 feet. 12th March, 1914.
[Nos. 81-3.]

d-p. 6 ♂, 8 ♀. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 14th March-20th May, 1914. [Nos. 87-90, 186, 195-6, 253, 303, 375, 419, 1591, 1592, 1602.]

q-w. 5 ♂, 2 ♀. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 25th-31st May, 1914. [Nos. 1658, 1685, 1699, 1700, 1793-5.]

"Iris Indian red, reddish brown, dark brown or hazel, bill black, feet black or slaty black, often with a greenish tinge."

This Babbling Thrush was very common in secondary jungle or patches of cultivation on the edge of old jungle, but did not appear to frequent the primaeval forest. It travelled in parties of seven or eight from tree to tree and was very restless, and continually uttered a harsh, screaming note.

The series before us is very uniform and appears to consist entirely of adult birds; a considerable proportion have the white of the pileum strongly washed with slatey and some have the middle of the abdomen more brownish than others, but the differences are not correlated with sex or age.

112. *Garrulax palliatus* (Temm.).

Garrulax palliatus (Temm.); Salvad. Ann. Mus. Civ. Gen. xiv, p. 230 (1879); Nicholson, Ibis, 1882, p. 61; id. 1883, p. 249; Sharpe, Cat. Birds Brit. Mus. vii, p. 446 (1883); Buttikofer, Notes Leyden Mus. ix, p. 67 (1887); Vorderman, Nat. Tijds. Nederl. Ind. xlix, p. 405, no. 330 (1889); Parrot, Abh. Konigl. Akad. Bayer. 11, Kl. xxiv, Bd. 1, p. 249 (1907).

Garrulax frenatus, Salvad. Ann. Mus. Civ. Gen. xix, p. 230 (1879).

a-g. 3 ♂ ad., 1 ♂ imm., 2 ♀ ad., 1 ♀ imm. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 16th-25th March, 1914. [Nos. 168-70, 178, 209, 240, 412.]

h-z. 6 ♂ ad., 10 ♀ ad. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. 2nd-21st April, 1914. [Nos. 572, 593-5, 723-5, 805-7, 837, 916, 923, 944, 1035, 1064.]

a'. 1 ♀ ad. Korinchi Peak, Sumatra, 7,300 feet. 12th May, 1914. [No. 1508.]

b'-f'. 1 ♂ imm., 4 ♀ ad. Barong Bharu, Barisan Range, West Sumatra, Lat 2° S. 4,000 feet. 4th-6th June, 1914. [Nos. 1895, 1921, 1923, 1940, 1964.]

The colours of the iris and orbital skin are apparently very variable.

"Adult female: (No. 923). Iris reddish brown, orbital skin greenish blue, bill pale yellow at gape, feet brownish black."

"*Adult female*: (No. 593). Iris brown, orbital skin pale bluish silvery, bill black, feet brownish black."

"*Adult male*: (No. 1064). Iris rich brown, orbital skin silvery cobalt, bill black, feet brownish black."

"*Adult male*: (No. 725). Iris whitish, bill black, yellow at gape, feet slaty."

"*Adult male*: (No. 916). Iris reddish, bill black, yellow at gape, feet brownish."

"*Immature male*: (No. 412). Iris whitish blue, bill black, gape bright yellow, feet black."

In contradistinction to the preceding species this bird is only found in old jungle, is quieter and more retiring in its habits and goes about in smaller flocks. In altitude it ranges from about 3,000 to 7,000 feet, but is very rare at the higher elevations.

Immature specimens have the grey of the upper and under surface less pure in tint, the feathers of the belly suffused with brownish. Fully adult birds have the bill entirely black, others have the gape more or less yellow. The sub-ocular black streak varies considerably throughout the series but is most in evidence in the more adult birds.

113. *Melanocichla lugubris* (S. Müll.).

Garrulax lugubris, Nicholson, *Ibis*, 1883, p. 249; Snellerman in Veth's *Midden-Sumatra Exped. Vogels*, iv, p. 43 (1884); Vorderman, *Nat. Tijds. Nederl. Ind.* xlix, p. 405, no. 328 (1889).

Melanocichla lugubris (S. Müll.); Sharpe, *Cat. Birds Brit. Mus.* vii, p. 451 (1883); Buttkofer, *Notes Leyden Mus.* ix, p. 67 (1887); Salvad. *Ann. Mus. Civ. Gen.* (2) xii, p. 65 (1891); Ogilvie Grant, *Fascic. Malay Zool.* 111, p. 84 (1905); Robinson, *Journ. Fed. Malay States Mus.* ii, p. 197 (1909).

Melanocichla peninsularis, Sharpe, *P. Z. S.* 1888, p. 274.

a, b. 2 ♀. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 16th-24th March, 1914. [Nos. 171, 378.]

c, d. 1 ♂, 1 ♀. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 1st June, 1914. [Nos. 1831, 1834.]

"Iris brown, orbits and naked gular skin slaty blue, bill orange, feet sage green, claws brown."

In small flocks generally among fallen timber near the ground at the edge of jungle clearings; not found above 4,000 feet in Korinchi.

These four specimens, typical of *M. lugubris*, compared with a large series of Peninsular specimens, show that Grant was correct in regarding the Malayan form as absolutely identical with that from Sumatra. The species fades with

great rapidity both in skin and apparently in feather during life, and old specimens lose the clear greyish black tint and acquire a distinctly sooty brown tint.

It was to a single bird in this state that Sharpe applied the name *M. peninsularis*.

114. *Rhinocichla mitrata* (S. Müll.).

Leiothrix mitrata, Salvad. Ann. Mus. Civ. Gen. xii, p. 230 (1879); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 405, no. 325 (1889).

Rhinocichla mitrata (S. Müll.); Sharpe, Cat. Birds Brit. Mus. vii, p. 452 (1883); Nicholson, Ibis, 1882, p. 61; id. op. cit. 1883, p. 248; Buttkofer, Notes Leyden Mus. ix, p. 68 (1887); Salvad. Ann. Mus. Civ. Gen. (2), xii, p. 66 (1891); Robinson, Journ. Fed. Malay States Mus. ii, p. 197 (1909).

Rhinocichla mitrata mitrata, Parrot, Abh. Konigl. Akad. Bayer. der Wissensch. 11, Kl. xxiv, Bd. i, p. 245 (1907).

a, b. 2 ♂. Sungei Penoh, Korinchi Valley, Sumatra, 2,700 feet. 10th-11th March, 1914. [Nos. 56, 35.]

c-i. 3 ♂, 4 ♀. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 14th-26th March, 1914. [Nos. 92, 101, 102, 278, 353, 426, 445.]

j-q. 5 ♂, 3 ♀. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. 1st-19th April, 1914. [Nos. 544, 551, 627, 641, 816, 932, 952, 1029.]

r-u. 2 ♂, 2 ♀. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 26th May-7th June, 1914. [Nos. 1675, 1804, 1814, 1883.]

v-w. 2 ♂. Barong Bharu, Barisan Range, West Sumatra, Lat 2° S. 4,000 feet. 5th-10th June, 1914. [Nos. 1909, 1916.]

"Iris chestnut or red, orbital skin livid silvery blue, bill orange, feet pale chrome or rich wax yellow."

Very common indeed in small flocks throughout the lower slopes of the Korinchi Valley up to about 5,000 feet, but not higher. A noisy and active bird, climbing about the masses of creepers festooning the trees, but not as a rule found high up on the larger trees. Less terrestrial than *Melanocichla lugubris*.

There are no marked differences in colour between this series and others from the mountains of the Malay Peninsula, where the species is common. Sumatran birds are a little more rusty, less maroon red on the pileum. There is some difference in size; 25 Malayan birds range from 101-119 mm. in length of wing, averaging 107.4; 23 Sumatran specimens range from 94-106 mm., averaging 101.4.

Bills of Malayan birds are larger.

The species is distinguished at a glance from the North Bornean form, *R. treacheri*, Sharpe, by having the ear coverts grey, not chestnut, the chin blackish, not chestnut, and by the absence of streaks on the fore-neck.

115. *Turdinus rufipectus*, Salvadori.

Turdinus rufipectus, Salvad. Ann. Mus. Civ. Gen. xiv, p. 224 (1879); Sharpe, Cat. Birds Brit. Mus. vii, p. 549 (1883); Buttikofer, Notes Leyden Mus. xvii, p. 69 (1895).

a-b. 1 ♂, 1 ♀. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 24th-25th March, 1914. [Nos. 395, 405.]

c-d'. 14 ♂, 14 ♀. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. 30th March-26th April, 1914. [Nos. 502, 512-5, 537, 545, 599-601, 628-9, 668, 703-7, 728-9, 753, 774, 843, 873-4, 926, 1023, 1168.]

e'-g'. 1 ♂, 2 ♀. Korinchi Peak, Sumatra, 7,300 feet. 1st-10th May, 1914. [Nos. 1329, 1479, 1482.]

h'. 1 ♂. Barong Bharu, Barisan Range, West Sumatra, Lat. 2° S. 4,000 feet. June 6th, 1914. [No. 1899.]

"Iris red, reddish chestnut, chestnut or rich brown; bill, upper mandible black, lower slaty; feet brownish."

A strictly terrestrial species confined to heavy jungle and therefore, perhaps, scarce at the lower levels, exceedingly abundant at Sungei Kumbang between 5,000 and 6,000 feet, but thinning out rapidly above that level and very scarce at our camp at 7,300 feet, above which it was not found.

116. *Malacocincla sepiaria* (Horsf.).

Turdinus sepiaria (Horsf.); Sharpe, Cat. Birds Brit. Mus. vii, p. 544 (1883); id. P.Z.S. 1888, p. 275; Robinson, Journ. Fed. Malay States Mus. ii, p. 198 (1909).

Malacocincla sepiaria, Buttikofer, Notes Leyden Mus. xvii, p. 81 (1895); Finsch, op. cit. xxii, p. 219 (1901).

Turdinus sepiarius var. *minor*, Meyer, Zeitschr. ges. Orn. p. 210 (1884).

Malacocincla minor, Buttikofer, loc. cit. p. 81.

Bessethera pyca Boie; Vorderman op. cit. p. 405, no. 321.

a-d. 2 ♂, 2 ♀. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 18th-26th March. [Nos. 228, 379-80, 440.]

"Iris red, bill slate, culmen black, feet pale slate."

A skulking bird, found among bushes or the lower branches of trees in old forest.

Dr. O. Finsch (*loc. cit.*) has categorically stated that *T. sepiaria* (Horsf.) and *T. minor* (Meyer) the types of both of which came from Java, are not separable, and accepting his conclusions we must also assume that the Sumatran bird which he also examined is not distinguishable from the Javan.

We have however, examined, besides the above-mentioned series, three others from the Bencoolen and Palembang highlands, two others from Bandar Bharu, in the N. E. Sumatran Highlands, and one from the hills near Banjoewangi, East Java, which is presumably typical *M. sepiaria sepiaria* (Horsf.). The Javan bird agrees with the East Sumatran specimens in being generally paler below, the centre of the belly and throat whitish, not dull grey, the flanks and crissum less richly coloured, and the dark cap less pronounced.

Possibly Meyer is right and there are two forms of this species occurring both in Java and Sumatra, the more richly coloured bird confined to the region of higher rainfalls, but we cannot distinguish the differences in size that he has done.

We therefore refrain from naming our form, though, on the specimens, the West Sumatran bird is certainly distinct from that inhabiting East Java.

The Malayan form, *M. s. tardinata*, Hartert, is separable at a glance from the Javan by the almost total absence of a cap, which is only noticeable in freshly shot and moulted birds, by the richer coloured flanks, and the consequent restriction of the white in the middle of the belly.

Erythrocichla bicolor (Less.).

Erythrocichla bicolor (Less.); Sharpe, Cat. Birds Brit. Mus. vii, p. 551 (1883).

Macalopteron ferruginosum, Blyth; Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 405, no. 317 (1889).

a. 1 ♂. Pasir Ganting, West Sumatran Coast, Lat. 2° S. June 19th, 1914. [No. 2036.]

"Iris red, bill pale horn, dark on culmen, feet pale flesh."

Fairly common in dense low country jungle; neither in Sumatra nor in the Malay Peninsula ascending the hills to any elevation.

Drymocapthus nigrocapitata (Eyton).

Brachypteryx nigrocapitata, Eyton, P. Z. S. 1839, p. 103.

Drymocapthus nigrocapitatus, Tweedd. Ibis, 1877, p. 308; Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 404, no. 300 (1889).

a-c. 2 ♂ ad., 1 ♂ imm. Pasir Ganting, West Sumatran Coast, Lat. 2° S. 19th-20th June, 1914. [Nos. 2033, 2050, 2059.]

"Iris chestnut, upper mandible black, lower fleshy white, feet brownish flesh."

This Bush Babbler appears to be somewhat rare in Sumatra and is not recorded by many collectors, though in the Malay Peninsula it is one of the commonest birds in the submontane zone.

The two adult specimens present somewhat marked differences from the large Malayan series before us, having the colour of the back olivaceous umber brown, with hardly any chestnut or russet tint; in the much darker, less chestnut, upper tail coverts and in the darker tail feathers themselves, which in one moulting bird with the feathers two thirds grown, are almost blackish in tint, not chestnut brown. The orange of the under surface is more ochraceous and less rufous than in the Malayan bird, which is the typical form.

In the Malay Peninsula itself, birds from the northern districts, Bandon and Trang, are decidedly paler and less intense in colouration than those from Selangor, Negri Sembilan and Malacca. Eyton's type in all probability came from the vicinity of Mount Ophir on the Malacca—Johore boundary.

***Aethostoma rostratum* (Blyth).**

Trichostoma rostratum, Blyth; Sharpe, Cat. Birds Brit. Mus. vii, p. 562 (1883); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 405, no. 312 (1889); Buttkofer, Notes Leyden Mus. xvii, p. 87 (1895).

Ptilocichla leucogastra, Davison, Ibis, 1892, p. 100.

Aethostoma rostratum, Sharpe, Hand-list, Birds, iv, p. 38 (1903).

a. 1 ♂. Pasir Ganting, West Sumatran Coast, Lat.

2° S. 20th June, 1914. [No. 2053.]

"Iris yellow, upper mandible black, lower bluish, feet fleshy."

We have compared this specimen with a large series of the species from the Malay Peninsula and find it identical. The present form has nothing to do with *T. buttkoferi*, Vorderman, Nat. Tijd. Nederl. Ind. (8) xii, p. 230 (1894), a much paler and somewhat smaller bird from the Lampongs in Southern Sumatra.

We have no information as to its habits in Sumatra. In the Malay Peninsula it is a shy and skulking bird, found among bushes in heavy jungle, in the low country. It is occasionally met with in mangrove swamps.

117. *Turdinulus epilepidota*, subsp. *dilutus*, Rob. & Kloss.

Myiothera epilepidota Temm. Pl. Col. 11, pl. 448, fig. 2 (1827) (part).

Brachypteryx epilepidota, Salvad. Ann. Mus. Civ. Gen. xiv, p. 225 (1879).

Turdinus epilepidotus, Sharpe, Cat. Birds Brit. Mus. vii, p. 540 (note) (1883).

Corythocichla epilepidota, Sharpe, Notes Leyden Mus. vi, p. 172 (1884).

Turdinulus epilepidotus, Buttkofer, Notes Leyden Mus. xvii, p. 75 (1895); Hartert, Nov. Zool. ix, p. 565 (1902) (part).

Turdinulus epilepidotus subsp. *dilutus*, Rob. & Kloss, Journ. Straits Branch Roy. Asiat. Soc. No. 73, p. 276 (1916).

a, b. 2 ♀. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 23rd-24th March, 1914. [Nos. 359, 382.]

c-t. 12 ♂, 2 ♀, 4 ♀ imm. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. 31st March-20th April, 1914. [Nos. 547, 560, 569, 576, 596, 669, 749, 802, 839, 849, 857, 861-3, 911, 943, 999, 1045.]

u. 1 ♂. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 2nd June, 1914. [No. 1839.]

Comparison of the above series with a series of six specimens from the Gedeh, Western Java, the typical locality of the species, discloses differences sufficient to warrant subspecific separation.

Specimens from both Java and Sumatra are extremely rare in European Collections and while Sharpe (loc. cit.) regards a specimen in the Leyden Museum marked as from Sumatra as the type, Dr. Hartert claims that the first locality mentioned by Temminck, viz. Java, whence there is an authentic specimen in the Liverpool Museum, must be regarded as the typical locality. We have, therefore, named the Sumatran form

TURDINULUS EPILEPIDOTA subsp. DILUTUS.

differing from *T. epilepidota typicus* from Java, in being considerably lighter (less blackish) above, and in having the feathers of the throat more decidedly tipped with black, those of the Javan form being almost immaculate in the centre of the throat. Dimensions slightly different from those of the Javan race, the tail and tarsus being slightly longer, and the bill decidedly shorter.

Sexes practically identical, the only noticeable differences being that the females have the white tips of the primary and secondary wing coverts smaller and more sullied than those of the male. The numbers of females available are, however, somewhat limited.

Specimens examined; fourteen adults from Sumatra and six adults from Western Java.

Type of the subspecies. Adult male, Sungei Kumbang, Korinchi, West Sumatra, collected on 13th April, 1914, by H. C. Robinson and C. Boden Kloss, Collector's No. 862.

Measurements in the flesh; Total length, 110; wing, 57; tail 36; tarsus, 23; bill from gape 19 mm. Range of eight adult males; total length, 108-120; wing, 55-58; tail, 36-40; bill from gape, 17-19; tarsus 22.5-27 mm.; range of six Javan specimens (measured in the flesh) total length, 116-125; wing, 52-59; tail, 31-35 mm.; bill from gape, 19.5-21; tarsus 21-24 mm.

Adult male: "iris carmine, bill upper mandible black, lower slate, feet dirty fleshy, toes lighter."

Immature: "iris brown, bill black, yellow beneath and at gape, feet brown."

A creeping, skulking, ground bird, dodging about under fallen timber and among dead leaves and debris on the ground exactly like *Pnoepyga lepida*. Consequently very hard to observe and to obtain in an undamaged state.

The immature specimens are very different from the adults, being almost uniform dull rufous brown beneath with hardly any indications of the white shaft stripes. The throat is uniform with the undersurface, not white surrounded by black-tipped feathers and the long white supercilium is only represented by a short buffy patch behind the eye. The tips to the wing coverts are rufous buff, not white, or white, tinged with buff.

This very distinct ground babbler is a bird of extreme rarity which does not appear to have been obtained by recent collectors since Beccari secured a single specimen on Mt. Singgalang. It is very distinct from the Malayan *Turdinulus*, *T. granti*, Richmond, (syn. *T. humei*, Hartert), and in characters is intermediate between *Turdinulus* Hume (*sensu stricto*), and *Corythocichla*, Sharpe.

118. *Rimator albostratus*, Salvad.

Rimator albostratus, Salvad. Ann. Mus. Civ. Gen. xiv, p. 224 (1879); Sharpe, Cat. Birds Brit. Mus. vii, p. 595 (1883); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 494, no. 303 (1889).

a, b. 1♂, 1♀. Sungei Kumbang, Korinchi, Sumatra, 4,000 feet. 19th April, 1914. [Nos. 1025-6.]

Male: "iris chestnut, bill dark greenish slate, paler at tip, feet brown, tinged with purple."

Female: "iris chestnut, bill black, feet pale brown."

These birds were shot by one of our Dyaks, running on a tall tree trunk in heavy jungle; we were never able to obtain any more specimens, though several men were assiduously searching for it, so the species must be very rare. The type, obtained by Beccari in 1879, appears to have remained unique, until the advent of the present specimens.

The female, which seems fully adult, agrees exactly with the original diagnosis of the type, which was a male; our male appears to be a slightly younger bird, has the white shaft

stripes of the lower surface somewhat broader and the feathers margining the white throat posteriorly tinged with rufous.

	Total length.	Wing.	Tail.	Bill from gape.	Tarsus.
<i>Male</i> ...	—	62	—	29.5	27.5 mm.
<i>Female</i> ...	145	62	43	32	28
<i>Male</i> (type)	145	67	33	30 (? culmen)	30

This species is distinguished from *Rimator malacoptilus*, the only other member of the genus, which is not known as yet east of Manipur, by its darker colouration and considerably larger size. Little is known of the habits of the genus, but the Sikkim and Manipur bird is supposed to be largely terrestrial in habits whereas, if our Dyak collector is correct, as there is no reason to doubt, the present bird is found high on trees, running along the trunks, though its soft and short tail does not support the statement. Further material and information are much needed.

119. *Alcippe cinerea*, Blyth.

Alcippe cinerea, Blyth; Sharpe, Cat. Birds Brit. Mus. vii, p. 622 (1883); Finsch, Notes Leyden Mus. xxii, p. 222 (1901); Robinson, Journ. Fed. Malay States Mus. ii, p. 201 (1909).

a. 1♂. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 30th May, 1914. [No. 1777.]

"Iris hazel, bill slate, culmen black, feet pale lilac slate."

This Nun Thrush is apparently rare in Sumatra, as this specimen was the only one met with. In the Malay Peninsula it is one of the commonest of submontane birds, being replaced at higher levels by *A. peracensis*, Sharpe, which has apparently no representative in Sumatra.

Stachyris nigricollis (Temm.).

Stachyris nigricollis (Temm.); Sharpe, Cat. Birds Brit. Mus. vii, p. 535 (1883); Robinson, Journ. Fed. Malay States Mus. ii, p. 202 (1909).

Timalia nigricollis, Temm.; Vorderman, Nat. Tijds. Nederl. Ind. xlix, p. 404, no. 285 (1889).

a. 1♀. Pasir Ganting, West Sumatran Coast, Lat. 2° S. 20th June, 1914. [No. 2,051.]

"Iris red, upper mandible black, lower slate, tip black, feet slate."

A low country jungle bird, widely spread in the Indo-Malayan countries, except in Java, but nowhere ascending the mountains to any considerable elevation.

120. *Stachyris larvata* (S. Müll.).

Timelia larvata, Bp. ex S. Müll.; Salvad. Ann. Mus. Civ. Gen. xiv, p. 222 (1879); Nicholson, Ibis, 1883, p. 251; Vorderman, Nat. Tijds. Nederl. Ind. xlix, p. 404, no. 286 (1889).

Stachyris larvata (Bp.); Sharpe, Cat. Birds Brit. Mus. vii, p. 534 (1883); Salvad. Ann. Mus. Civ. Gen. (2) xii, p. 62 (1891).

a-g. 2♂, 5♀. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 15th-27th March, 1914. [Nos. 123-4, 142, 307, 392, 414, 476.]

h-v. 7♂, 7♀, 1♀ imm. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. 31st March-21st April, 1914. [Nos. 521, 566, 577-8, 610, 741-3, 755, 783, 786, 940, 969, 1074-5.]

w-z. 1♂, 3♀. Korinchi Peak, Sumatra, 7,300 feet. 25th April-13th May, 1914. [Nos. 1143, 1267, 1518-19.]

a'-b'. 2♂. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 24th May, 1914. [Nos. 1632-3.]

c'. 1♂. Barong Bharu, Barisan Range, West Sumatra, 4,000 feet. Lat. 2° S. 10th June, 1914. [No. 1908.]

"Iris red or chestnut, bill blackish slate or slaty green, black on culmen, gape in youngish birds yellow, feet yellowish olive, yellowish green or greenish slate."

Very common up to about 5,000 feet, after which it rapidly became scarcer; travelling in small parties among the thick undergrowth and low shrubs and uttering a very pleasant little song.

This small Babbler belongs to a section of the genus very characteristic of the submontane zone of the Indo-Malayan countries and all the species ranging from the Himalayan *S. nigriceps* to the Bornean *S. borneensis* are very closely related. The present form is the most richly coloured of all and has the feathers of the under surface with somewhat lighter centres, giving an obscurely streaked effect.

The grey of the chin and throat varies greatly in tint, being very pale in some and almost black in a few specimens.

121. *Stachyridopsis chrysaea* subsp. *bocagii* (Salvad.).

Stachyris bocagei, Salvad. Ann. Mus. Civ. Gen. xiv, p. 59 (1879); Hume, Stray Feath. ix, p. 117 (1880); Nicholson, Ibis, 1883, p. 251; Salvad. Ann. Mus. Civ. Gen. (2) xii, p. 63 (1891); Vorderman, Tijds. Nederl. Ind. xlix, p. 404, no. 290 (1889).

Stachyridopsis assimilis (part.) Sharpe, nec Walden, Cat. Birds Brit. Mus. vii, p. 602 (1883).

Stachyridopsis chrysaea assimilis (part.) Hartert, Nov. Zool. ix, p. 566 (1902).

a. 1♂. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 24th March, 1914. [No. 393.]

- b-o. 8 ♂, 6 ♀. Sungei Kumbang, Korinchi, Sumatra, 4,500 feet. 31st March-20th April, 1914. [Nos. 524, 579, 781, 647-8, 784, 822, 901-2, 942, 970, 979, 1031, 1054.]
- p-r. 3 ♂. Korinchi Peak, 10,000 feet. 4th May-9th May, 1914. [Nos. 1367, 1368, 1416.]
- s. ♂. Barong Bharu, Barisan Range, W. Sumatra, Lat. 2° S. 4,000 feet. June 6th, 1914. [No. 1904.]

"Iris hazel, or brown, sometimes red, bill black, slate or lead, base pinkish, feet yellowish brown or dirty wax yellow tinged with green.

Comparison of series of these Golden-headed Babblers from different localities is rendered difficult by the fact that the skins fade with great rapidity, especially the clear yellow on the crown and on the undersurface. It is evident, however, that specimens from the Nepal and Sikkim Himalayas, *Stachyris chrysaea chrysaea*, Hodgs., are much clearer yellow above and below than any of the allied forms. *Stachyris chrysaea assimilis* from Karen-nee, ranging down to Central Tenasserim, (*Walden, in Blyth's Birds, Burma*, p. 116 (1875)), is a duller bird, especially above, with the streaks of the crown less marked. From this form, *Stachyris chrysops*, Richmond (*Proc. Biol. Soc. Washington* xv, p. 157 (1902)), described from Trang, in the north of the Malay Peninsula, is doubtfully distinct. It was sent by its describer to Dr. Sharpe, "who considered it new and closely related to *S. chrysaea*."

No comparison seems to have been made with *S. assimilis*, from which the actual specimen of *S. chrysops*, being a fresh skin, probably differed markedly in strength of tint. The F.M.S. Museums possesses very large series of specimens from both north and south of the locality of the type specimen of *S. chrysops*, with which some have been compared and found to agree perfectly, and we fail to see in what particular they differ from *S. assimilis*; pending actual comparison of freshly collected material from Tenasserim, we have, however, left the Malayan Peninsula form under Richmond's name, which, at the most, is only of subspecific value.

The large series of the Sumatran form listed above, shows that it, too, is very slightly differentiated from the Malayan form, from which it can perhaps be separated by a slightly larger bill and generally darker and more intense colouration, the sides of the breast and flanks especially being strongly suffused with dusky olive.

122. *Stachyridopsis poliogaster* (Hume.).

Stachyris poliogaster, Hume, *Stray Feathers*, ix, p. 116 (1880); Robinson, *Journ. Fed. Malay States Mus.* ii, p. 202 (1909).

Stachyridopsis poliogaster, Sharpe, Cat. Birds Brit. Mus. vii, p. 599 (1883); Harington, Journ. Nat. Hist. Soc. Bombay, xxiii, p. 631, note (1915).

Cyanoderma poliogaster, Buttkofer, Notes Leyden Mus. xxi, p. 237 (1900).

a. 1♀. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 25th May, 1914. [No. 1666.]

"Iris red, bill slate, culmen black, base of lower mandible pink, feet pale olive grey."

Shot among low brushwood in secondary jungle.

Careful comparison of this specimen, which is unfortunately somewhat damaged, with four others from the Malay Peninsula, fails to disclose any material differences. The species is only known from the type, collected in Southern Johore, from five or six other specimens from various parts of the Malay Peninsula as far north as Bandon in Peninsular Siam, and from a single female from Mount Liang Koeboeng in Dutch Central Borneo. Sumatra is therefore a considerable, though not unexpected extension to the range.

123. *Thringorhina striolata* (S. Müll.).

Timelia striolata, S. Müll. Tijd. Nat. Gesch. en Phys. II, p. 346 (1835); Salvad. Ann. Mus. Civ. Gen. xiv, p. 222 (1879); id. op. cit. (2) xii, p. 62, note (1891); Nicholson Ibis, 1883, p. 251.

Stachyris poliocephala (part), Sharpe, Cat. Birds Brit. Mus. vii, p. 534 (1883).

Stachyris striolata, Sharpe, Notes Leyden Mus. vi, p. 169 (1884).

a-e. 3♂, 2♀. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 21st-25th March, 1914. [Nos. 291, 298, 320, 386, 404.]

f-u. 10♂, 6♀. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. 3rd-19th April, 1914. [Nos. 604, 654-6, 693-5, 779-81, 864, 905, 959-60, 1001, 1014.]

v. 1♂. Korinchi Peak, Sumatra, 7,300 feet. 28th April, 1914. [No. 1245.]

w-y. 3♂. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 25th May-1st June, 1914. [Nos. 1650-1, 1824.]

z-a'. 2♂. Barong Bharu, Barisan Range, West Sumatra, Lat. 2° S. 4,000 feet. 7th-10th June, 1914. [Nos. 1914, 1967.]

"Iris red or chocolate, bill slate, the culmen blackish, feet greenish, orbital skin bluish."

Very common among low bushes and dense undergrowth from 3,000-5,000 feet, but rare above this limit. Evidently local in its distribution, as the only collectors who have obtained it of late years are Beccari and Forbes, who each secured a single specimen.

Thringorhina guttata (Blyth), of which the F.M.S. Museums possesses specimens from the north of the Malay Peninsula, is closely allied to this species, of which it can only be regarded as the mainland representative; it differs only in having the upper surface of a much lighter brown and in having the white centres to the feathers of the sides of the head and neck more extensive; the ear coverts also are dark fuscous brown, not greyish black as in the Sumatran bird; there appears to be no difference in size.

The genus, founded on the peculiar bill with an extraordinarily large operculum to the nostrils and the distinctive type of colouration, appears to be well characterised.

Macronus ptilosus, Jard. & Selby.

Macronus ptilosus, Jard. & Selby; *Salvad. Ann. Mus. Civ. Gen.* xix, p. 224 (1879); Sharpe, *Cat. Birds Brit. Mus.* vii, p. 583 (1883); Vorderman, *Nat. Tijd. Nederl. Ind.* xlix, p. 404, no. 294 (1889); Parrot, *Abh. Konigl. Akad. Bayer.* II, xxiv, Bd. I, p. 248 (19); Robinson, *Journ. Fed. Malay States Mus.* ii, p. 203 (1909); Stone, *Proc. Acad. Nat. Sci. Philad.* liv, p. 685 (1902).

a, b. 2 ♂. Pasir Ganting, West Sumatran Coast,
Lat. 2° S. 19th June, 1914. [Nos. 2,027,
2,028.]

"Iris chestnut, orbital and gular skin cobalt, turquoise over eye, bill black, feet slate."

Of exactly the same habits and distribution as *Stachyris nigricollis*, but perhaps rather less arboreal in its habits than that species.

124. Mixornis ruficapilla subsp. *sumatrana* (Bp.).

Motacilla gularis, Raffles, *Trans. Linn. Soc.* xiii, p. 312 (1822).

Timalia gularis, Horsf. *Zool. Res. in Java* (1824) description and figure.

Mixornis sumatrana, Bp. *Consp. Av.* I, p. 217 (1850).

Mixornis gularis (Raffles); *Salvad. Ann. Mus. Civ. Gen.* xiv, p. 223 (1879); Sharpe, *Cat. Birds Brit. Mus.* vii, p. 576 (1883); Buttkofer, *Notes Leyden Mus.* vii, p. 68 (1887); Vorderman, *Nat. Tijd. Nederl. Ind.* xlix, p. 404, no. 292 (1889); Hartert, *Nov. Zool.* ix, p. 213 (1902); Stone, *Proc. Acad. Nat. Sci. Philad.* liv, p. 685 (1902).

a, b. 2 ♀. Sandaran Agong, Korinchi Valley,
Sumatra, 2,450 feet. 24th May-1st June,
1914. [Nos. 1639, 1827.]

Expedition to Korinchi:

c, d. 1 ♂, 1 ♀. Pasir Ganting, West Sumatran Coast,
Lat. 2° S. 21st June, 1914. [Nos. 2067-8.]

"Iris chestnut, bill and orbital skin smalt, the former duller, feet sage green."

Common along the coast among the Casuarinas and the vegetation around them, not so numerous in the Korinchi Valley, where the species was found in secondary jungle and at the edge of cultivation and in gardens.

The original types of this species came from Bencoolen, and the birds from Pasir Gantang are therefore practically topotypes. They agree perfectly with the Korinchi birds and differ but very slightly from those of the southern part of the Malay Peninsula, *Mixornis pileata*, Blyth. Those from the northern parts of the Peninsula, *M. r. connectens*, Kloss, are more olive above and on the outer aspect of the wings and have the throat stripes narrower. They are merging into *M. rubricapillus* (Tick.) from India and Burma.

125. *Arrenga castaneus* (Wardl. Rams.).

Myiophoneus castaneus (Wardl. Rams.) P. Z. S. 1880, p. 16, pl. 1; Sharpe, Cat. Birds Brit. Mus. vii, p. 14 (1883); Buttkofer, Notes Leyden Mus. ix, p. 66 (1887); Vorderman, Nat. Tijds. Nederl. Ind. xlix, p. 409, no. 366 (1889); Salvad. Ann. Mus. Civ. Gen. (2) xii, p. 64 (1891); Parrot, Abh. Konigl. Akad. Bayer. 11, xxiv, Bd. 1, p. 48 (1907); Van Oort, Notes Leyden Mus. xxxiv, p. 60 (1911).

a-c. 2 ♂ imm., 1 ♀ ad. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 14th-27th March, 1914. [Nos. 94, 177, 470.]

d. 1 ♂ imm. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. 5th May, 1914. [No. 675.]

e-i. 3 ♂ ad., 1 ♂ imm., 1 ♀. Barong Bharu, Barisan Range, West Sumatra, 4,000 feet. 4th-11th June, 1914. [Nos. 1892-3, 1912, 1917, 1960.]

"Adult male: Iris hazel, bill and feet black."

"Adult female: Iris hazel, bill black, feet brownish black."

"Immature male: Iris hazel, bill black, the mouth yellow, feet black."

This very aberrant Whistling Thrush is apparently represented in collections by about six specimens only, viz., the male type from Mt. Sago, Padang Highlands, collected by Carl Bock, a pair from the same locality collected by Klaesi, a female from an unknown locality in the British Museum, a male from the South end of the Toba Lake, North Central Sumatra, secured by Modigliani, a male from the Sibajak Volcano in the Battak Highlands to the north of the same lake, in the collection of Baron van Dedem, and one obtained by Martin in approximately the same district in 1894.

We found it very much rarer than *Arrenga melanura*, by which it was probably masked, though the latter appears to range higher than *A. castaneus*, which does not occur above about 7,000 feet. At Barong Bharu on the Barisan Range it was evidently fairly common. The habits and cry are exactly the same as the other two species *A. melanura* and *M. dicrorhynchus*, though it is a much shyer bird than the latter species, which we have noted hopping about on boulders in streams, near houses and on the edge of cultivation in the Korinchi Valley.

The specimen noted by van Oort as having the blue of the breast continued further down the belly than in the figure of the type is evidently only a fully adult male as surmised by the author. Three specimens from Barong Bharu agree perfectly with his description.

Adult females are almost uniform chestnut above and below, darker below, with the bases of the feathers white. Shoulder patch bright purplish blue, top of the head strongly washed with purplish blue, except the extreme frontal region and lores, which are brownish. Immature males at first resemble the female but are much darker below with the head and neck all round bluish, including the forehead and lores. In the fully adult male the chest and belly becomes deep blue and the belly, flanks and under tail coverts rich chestnut, lighter than in the immature birds.

Comparison of this series with a large number of *Arrenga cyanea* (Horsf.) from Java, the type of the genus *Arrenga* Less., shows that the shape of the bill is identical in both species and different from *Myiophoneus* of which the type is *M. flavirostris* from Java.

126. *Arrenga melanura*, Salvad.

Arrenga melanura, Salvad. Ann. Mus. Civ. Gen. xiv, p. 227 (1879); Ramsay, P. Z. S. 1880, p. 16; Nicholson, Ibis, 1882, p. 60; id. op. cit. 1883, p. 247; Vorderman Nat. Tijds. Nederl. Ind. xlix, p. 409, no. 367 (1889.)

Myiophoneus melanurus, Sharpe, Cat. Birds Brit. Mus. vii, p. 12 (1883); Buttkofer, Notes Leyden Mus. ix, p. 66 (1887).

a-c. 2 ♂ imm., 1 ♀ imm. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 23rd-27th March, 1914. [Nos. 330, 406, 461.]

d-s'. 20 ♂, 1 ♂ imm., 18 ♀, 3 ♀ imm. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. 30th March-13th May, 1914. [Nos. 504-6, 510-11, 532, 539, 575, 590-91, 611, 622, 661-62, 676, 681-2, 711, 717-8, 739, 758, 775, 795, 842, 846-7, 891-2, 933-5, 956, 990, 993-4, 1017, 1050, 1077, 1530, 1559, 1569.]

l'-k''. 11 ♂, 6 ♀, 1 ♂ imm. Korinchi Peak, Sumatra, 7,300-10,000 feet. 23rd April-13th May, 1914. [Nos. 1093, 1133, 1162, 1238, 1304, 1356, 1376-9, 1399-1401, 1493, 1504-6, 1523.]

l''-r''. 3 ♂, 1 ♂ imm., 3 ♀. Barong Bharu, Barisan Range, West Sumatra, Lat. 2° S. 4,000 feet. 6th-11th June, 1914. [Nos. 1896, 1910-11, 1919, 1961-2, 2091.]

"Iris hazel, bill and feet black; immature, with the bill yellowish at tip and gape."

A very tame and fearless bird, extremely common among the undergrowth in heavy jungle from 4,500 feet to the limit of forest vegetation at over 10,000 feet but scarce below 3,000 feet. Especially abundant near water. The call is a loud and musical whistle similar to that of species of *Myiophonus*, but this bird is very much less shy than the birds of that genus with which we are acquainted.

The separation of the three species, *A. cyanea* (Horsf.), *A. melanura* (Salvad.), and *A. castaneus* (Wardl. Rams.), from the larger forms with heavier beaks, and less rounded wings, included in *Myiophonus* is in our opinion quite justified, though it is very questionable whether the species from Ceylon, *A. blighi*, is congeneric with the Malayan forms.

Salvadori states that the sexes do not materially differ, but the very large series listed above confirms Dr. Sharpe's descriptions, the females being very much less black and more purplish beneath, with the cobalt spangled tips to the feathers above and beneath less pronounced.

Very young birds are uniform sooty black beneath, but rather older birds have the feathers of the breast with narrow whitish brown shaft stripes and the lores tipped with the same colour.

127. *Myiophonus flavirostris* subsp. *dicrorhynchus*, Salvad.

Myiophonus dicrorhynchus, Salvad. Ann. Mus. Civ. Gen. xiv, p. 227 (1879.)

Myiophonus dicrorhynchus, Wardl. Rams. P.Z.S. 1880, p. 16; Nicholson, Ibis, 1883, p. 247; Sharpe, Cat. Birds Brit. Mus. vii, p. 10 (1883); Salvad. Ann. Mus. Civ. Gen. (2) xii, p. 64 (1891); Grant. Journ. Fed. Malay States Mus. iii, p. 27 (1908); Robinson, op. cit. ii, p. 203.

Myiophonus sp. inc., Sharpe, P.Z.S. 1887, p. 436.

Myiophonus flavirostris, Buttkofer, Notes Leyden Mus. ix, p. 65 (1887); Vorderman, Nat. Tijds. Nederl. Ind. xlix, p. 409, no. 365 (1889).

Myiophonus eugenii, Butler (nec. Hume.), Journ. Straits Branch. Roy. Asiat. Soc. No. 32, p. 12 (1899); Bonhote, P.Z.S. (1), 1901, p. 63.

a-f. 2 ♂ ad., 1 ♀ ad., 3 ♀ imm. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 14th-24th March, 1914. [Nos. 104, 119, 129, 261, 300, 396.]

"Adult, iris hazel, bill yellow, culminal region corneous, feet black; immature, iris dark, bill blackish horn, yellow at gape and tip, feet black."

This large and heavily built Whistling thrush was fairly common at Siolak Daras and also at Sungei Penoh, frequenting the beds of mountain streams where they debouched on the main valley. In the old jungle and on the higher hills it appeared to be displaced entirely by *A. melanura*, which was relatively a very much commoner species.

On comparing the above series and six adults from various parts of the Malay Peninsula it is evident that insufficiency of material lead Dr. Sharpe to entirely misplace this species in his key to the genus in the "Catalogue of Birds" (*loc. cit.*) All the adults in the series before us have the tips of the median wing coverts pale mauve, the shoulder spot is distinctly brighter than the rest of the plumage, though not conspicuously so and the glistening tips to the body feathers cannot be said to be "obsolete," though they are less marked than in other species of the group except *A. castaneus*. Buttikofer was obviously correct in regarding the alliances of the form to be with *M. flavirostris*, of Java, from which it can, however, be at once separated by its very much larger size (wing 6.5 in. against 5.8 in the Javan bird).

The three Sumatran adults appear to have the tail blacker and less glossed with blue than those from the Peninsula, but the differences are not constant.

128. *Heteroxenicus saturata* (Salvad.).

Brachypteryx saturata, Salvad. Ann. Mus. Civ. Gen. xiv, p. 225 (1879); Nicholson, Ibis, 1883, p. 250, pl. X, fig. 2; Sharpe, Cat. Birds Brit. Mus. vii, p. 27 (1883); Vorderman, Nat. Tijds. Nederl. Ind. xlix, p. 404, no. 304 (1889).

Heteroxenicus saturatus, Sharpe, Hand-l. Birds iv, p. 56 (1903).

a-s. 12 ♂, 5 ♀, 2 ♀ imm. Korinchi Peak, Sumatra, 7,300 feet. 23rd April-14th May, 1914. [Nos. 1092, 1095, 1111, 1114, 1122, 1135, 1141-2, 1173-4, 1217, 1232, 1240, 1254, 1262-4, 1533-4.]

t-e'. 7 ♂, 5 ♀. Korinchi Peak, Sumatra, 10,000 feet. 1st-9th May, 1914. [Nos. 1309, 1313-4, 1322-4, 1338-9, 1403, 1406, 1423, 1459.]

"Adult: iris hazel, bill and feet black. Immature: iris brown, feet black, bill black, gape yellowish white."

This bird was not met with below 7,000 feet, and extended to the superior limit of forest vegetation at 10,000 feet or

slightly over. It was met with in dark gullies hopping over boulders or logs, singly or in pairs, not taking to flight when alarmed but running with extreme agility. It was rather noisy and not particularly shy, the note consisting of a clear, melodious whistle.

The adult female does not appear to have been described; it resembles the male but has the general colour duller and less bluish black, the middle of the breast and abdomen greyish lavender, much more extensive than in the male, while the silvery white superciliary stripe is quite lacking.

Immature birds are sooty blackish brown, the feathers streaked and tipped with rusty brown.

Fully adult males appear almost to lose the ashy grey tint on the middle of the abdomen and to become nearly uniform dark indigo blue beneath.

129. *Heteroxenicus leucophrys* (Temm.).

Myiothera leucophrys, Temm. Pl. Col. ii, pl. 448, fig. 1 (1827).

Brachypteryx leucophrys, Sharpe, Cat. Birds Brit. Mus. vii, p. 28 (1883); Hartert, Nov. Zool. iii, pp. 544, 557, 566, 593; Finsch, Notes Leyden Mus. xxii, p. 215 (1901).

Heteroxenicus leucophrys, Sharpe, Hand-l. Birds, iv, p. 57 (1903).

a-c'. 15 ♂, 2 ♂ imm., 11 ♀, 1 ♀ imm. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. 1st-20th April, 1914. [Nos. 541, 548, 653, 659, 660, 678, 696, 700, 768, 792-3, 804, 811, 838, 851, 859, 904, 910, 919, 920, 929, 938, 946, 975, 980, 996-8, 1038.]

d'. 1 ♀. Barong Bharu, Barisan Range, West Sumatra, Lat. 2° S. 4,000 feet. 6th June, 1914. [No. 1947.]

"*Adult*: Iris hazel, bill horn, pinkish at base, feet purplish lilac; *Immature*, iris dark, bill horn, yellowish at gape, feet greenish, in other specimens dirty purplish mauve."

Abundant in the heavy forest near Sungei Kumbang, from about 4,000 feet, to rather over 5,000 feet but only within these limits.

The sexes do not materially differ, but the colour of the male above is a rather more ruddy brown than in the female. Immature birds are streaked and spotted.

There is little doubt that the large series recorded above should be referred to *H. leucophrys*, which has not hitherto been recorded from Sumatra, though it ranges east from the type locality Pangerango in Java, to the mountains of Sumbawa.

From *H. wrayi* (Ogilvie Grant), from the mountains of the Malay Peninsula, it differs in having both sexes brown (in

H. wrayi the male is usually greyish blue), and in the slightly smaller size and more olive, less rufous tint of the upper surface.

Both sexes of the present species have the extreme bases of the feathers above the eye white, forming a short concealed superciliary streak.

Salvadori has described from a single female obtained on Singgalang by Beccari a species *Brachypteryx flaviventris*, which is characterised as being brown above, with an obsolete superciliary streak of yellowish and with the inferior surface yellowish, the abdomen brighter, wing 50 mm.

The Korinchi bird, cannot, however, be referred to Salvadori's species as no specimen has any trace of yellow in the plumage, while the wing ranges from 57-61 mm., and the tail does not as a rule exceed 40. Salvadori gives 50 mm. as the length of his.

130. *Sibia picaoides* subsp. *simillima* (Salvad.).

Heterophasia simillima, Salvad. Ann. Mus. Civ. Gen. xiv, p. 232 (1879); Wardl.-Rams. P.Z.S. 1880, p. 16; Nicholson, Ibis, 1883, p. 250; Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 403, no. 275 (1889).

Sibia simillima, Sharpe, Cat. Birds Brit. Mus. vii, p. 402 (1883); Salvad. Ann. Mus. Civ. Gen. (2) xii, p. 67 (1891).

a-d. 3♂, 1♀. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 15th-25th March, 1914. [Nos. 125, 199, 435-6.]

e-m. 3♂, 6♀. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. 31st March-21st April, 1914. [Nos. 523, 584, 608, 667, 754, 893, 985, 995, 1076.]

n-y. 7♂, 5♀. Korinchi Peak, Sumatra, 7,300 feet. 23rd April-11th May, 1914. [Nos. 1096, 1144, 1187, 1222, 1288, 1319, 1327-8, 1436, 1438, 1499, 1507.]

z-d'. 5♀. Korinchi Peak, Sumatra, 10,000 feet. 6-7th May, 1914. [Nos. 1389, 1455-8.]

e'-i'. 4♂, 1♀. Barong Bharu, Barisan Range, West Sumatra, Lat. W.S. 4,000 feet. 7th-11th June, 1914. [Nos. 1939, 1963, 1965, 1977, 1980.]

"Iris carmine, bill black, feet slate in adult birds, iris chocolate and the gape dull yellow in an immature bird."

From where the jungle commenced on the valley slopes above Siolak Daras to the upper margin of the forest on Korinchi Peak at rather over 10,000 feet this *Sibia* was fairly

abundant, feeding on the high trees in flocks of about a dozen individuals. It was very active and restless in its movements, never staying long in any one place, but was not at all shy and was very curious and loath to desert any companion that had been wounded. The note is a clear double whistle, often repeated.

Comparison of the above large series with a considerable number from various parts of the Malay Peninsula show that the characters on which Ogilvie Grant separated the latter bird as *Sibia wrayi*, Bull. Brit. Orn. Club, xxv, p. 98 (1910), viz., the greyish instead of light drab brown sides, flanks and under tail coverts are quite constant.

131. *Mesia laurinae* (Salvad.).

Leiothrix laurinae, Salvad. Ann. Mus. Civ. Gen. xiv, p. 231 (1879); Gould, Birds Asia, iv, Pl. 17 (1883); Vorderman, Nat. Tijds. Nederl. Ind. xlix, p. 405, no. 326 (1889).

Mesia laurinae (Salvad.); Sharpe, Cat. Birds Brit. Mus. vii, 643 (1883); Salvad. Ann. Mus. Civ. Gen. (2) xii, p. 66 (1891).

a-b'. 16♂, 12♀. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. 30th March-12th May, 1914. [Nos. 503, 508-9, 543, 587, 606, 623, 642, 752, 761-2, 769-70, 853, 885-6, 888, 895, 925, 927, 1003, 1016, 1046, 1065-6, 1562, 1570-1.]

d'-p'. 7♂, 6♀. Korinchi Peak, Sumatra, 7,300 feet. 25th April-1st May, 1914. [Nos. 1145, 1165, 1214-5, 1219-20, 1243-5, 1250, 1306, 1311-2.]

q'. 1♂. Barong Bharu, Barisan Range, West Sumatra, Lat. 2° S. 4,000 feet. [No. 1898.]

"Iris hazel, bill orange, feet yellow or brownish yellow."

This very beautiful and very active little bird only appeared when we reached a level of over 4,000 feet, from which altitude to over 7,000 feet it was extremely abundant, though it disappeared completely above 8,000 feet. It was met with in pairs and small flocks of up to about a dozen individuals, climbing about creepers and among fallen timber, searching for insects, etc. The note is a shrill one but is not very often uttered.

This species with its rich scarlet crimson breast is a very much handsomer bird than its Himalayan and Malayan congener. Unlike that species, which differs slightly in the sexes, the males and females of the present form are absolutely alike.

The species is confined to the high mountains of Sumatra and the genus is not represented either in Java or in Borneo.

132. *Pnoepyga pusilla* subsp. *lepida*: Salvad.

Pnoepyga pusilla (nec. Hodgs.) Salvad. Ann. Mus. Civ. Gen. xiv, p. 226 (1879); Sharpe, Cat. Birds, Brit. Mus. vi, p. 304 (1881); Nicholson, Ibis, 1883, p. 248; Vorderman, Nat. Tijds. Nederl. Ind. xlix, p. 404, no. 309 (1889); Sharpe, P. Z. S. 1888, p. 273.

Pnoepyga lepida, Salvad. Ann. Mus. Civ. Gen. xiv, p. 227 (1879); id. op. cit. (2) xii, p. 63 (1891); Hartert, Nov. Zool. ix, p. 570 (1902); Ogilvie Grant, Journ. Fed. Malay States Mus. iii, p. 24 (1908); Robinson, op. cit. ii, p. 205 (1909.)

a-f. 2 ♂ ad., 2 ♂ imm., 2 ♀ ad. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 22nd-27th March, 1914. [Nos. 317, 383-4, 407, 411, 479.]

g-p'. 17 ♂ ad., 17 ♀ ad., 2 ♀ imm. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. 31st March-21st April, 1914. [Nos. 516-9, 549, 580, 630-2, 634, 646, 657-8, 680, 686, 701-2, 713, 731, 748, 785, 814-5, 826, 858, 889-90, 909, 967-8, 1000, 1006, 1022, 1041-2, 1063.]

q'-x'. 5 ♂ ad., 1 ♂ imm., 2 ♀ ad. Korinchi Peak, Sumatra, 7,300 feet. 26th April-14th May, 1914. [Nos. 1169, 1180, 1192, 1234, 1280, 1293, 1524, 1528.]

y'-a''. 1 ♂ ad., 2 ♀ ad. Korinchi Peak, Sumatra, 10,000 feet. 5th-6th May, 1914. [Nos. 1390-1, 1409.]

b''. 1 ad. Barong Bharu, Barisan Range, West Sumatra, Lat. 2° S. 4,000 feet. [No. 1955.]

"Iris hazel or dark, bill horn, pinkish at base, feet brown."

Exceedingly common in dense and tangled vegetation, creeping about like a lizard or small mouse and consequently rather difficult to obtain as it vanished into the vegetation at the least alarm and was difficult to see except at very close quarters. Equally common in suitable localities in old jungle from 3,000 to over 10,000 feet at the limit of the forest.

Of the 48 fully adult specimens in the above series a large proportion have had the sexing verified with special care by ourselves and as a result it can be confidently asserted that there is no constant and reliable difference in the coloration of the two sexes. If the series is laid out by sexes it might perhaps be stated that the females average more buffy on the under surface than males, but there are males as buffy as the females and females as white as the males, so that no sexual distinction can be regarded as established.

We have rigorously compared with the above Sumatran series ten adults from the mountains of the Central and Southern parts of the Malay Peninsula. In these also there

is no constant sexual distinction but the series as a whole differs in being much more heavily squamulated below than in the Sumatran birds and in having the forehead, sides of the head and lores decidedly less rufous. From the Himalayan *Pnoepyga pusilla* it differs in this heavier squamulation and in having the forehead and lores not concolorous with the occiput. The differences which are not very evident when only single specimens are examined are sufficient, in view of the large series available to warrant separation and the Malay Peninsula bird may therefore be characterised as

PNOEPYGA PUSILLA subsp. *HARTERTI* nov.

Intermediate between *P. pusilla pusilla* (Hodgs.) from the Himalayas and *P. pusilla lepida*, Salvad., from Sumatra. Differs from the former in the fact that the sexes are not conspicuously different, in having a dull rufous forehead and in the much heavier squamulation of the undersurface. From the latter differs in the duller lores and sides of the head, which are not nearly so rufous and in the generally whiter undersurface.

Size apparently slightly smaller than the Sumatran form, wing 47-51 mm., bill from gape, 17-18 mm.

Type. Adult male. Gunong Ijau, Larut Range, Perak, 4,700 feet, collected on 16th August, 1909 by C. Boden Kloss.

Specimens examined:—Ten adults and three immature.

The bird from Siamese Malaya is intermediate between this race and *P. pusilla pusilla*, and is very lightly squamulated below. The sides of the head and lores are dull rufous (Robinson, Journ. Fed. Malay States Mus. v, p. 107 (1914)).

In this section two other species, or rather races, remain to be considered, viz:—

(i.) *Pnoepyga pusilla rufa*, Sharpe.

Pnoepyga rufa, Sharpe, Cat. Birds Brit. Mus. vi, p. 304 (1884) [Java].

We have recently obtained a series of 13 adults from the Gedeh, West Java, the typical locality; the specific name is unfortunate as the freshly collected birds are decidedly less rufous than either the Malayan or the Sumatran birds. From the former it is separable by the whiter undersurface and from the latter by the more olive, less rufous upper surface and sides of head. The terminal spots to the feathers of the upper surface are more discrete and clearly defined than in either of the allied races and the blackish edges to the feathers less marked. The size is about that of the Sumatran form, rather larger than the Malayan.

(ii.) *Pnoepyga pusilla everetti*, Rothschild.

Pnoepyga everetti, Rothschild, Nov. Zool. iv, pp. 168, 516 (1897) [Flores].

Evidently very close to *P. p. rufa*; Sharpe's original descriptions of that race, founded on old and deteriorated specimens in the Leyden Museum having evidently misled Lord Rothschild, who had no Javan specimens available for comparison.

133. *Geocichla interpres* (Temm.).

Turdus interpres, Temm., Pl. Col. ii, no. 458 (1828).

Geocichla interpres (Temm.); Seebohm, Cat. Birds Brit. Mus. v, p. 166 (1881); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 409, no. 364 (1889); Van Oort, Notes Leyden Mus. xxxii, p. 144 (1910); Robinson & Kloss, Journ. Fed. Malay States Mus. v, p. 56 (1914).

a. 1 ♂. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 7th June, 1914. [No. 1880.]

"Iris hazel, bill black, feet yellowish flesh, claws pinkish horn."

This specimen, which was the only one seen in the course of the expedition, was collected by one of our Dyaks in a patch of heavy jungle not far from the lake. Though recorded from Sumatra in many publications it does not appear to be contained in any of the more recent collections.

In the Malay Peninsula it is very rare, only two specimens having been obtained in the last twenty years, one in the mountains of Trang, Siamese States, by Dr. Abbott, and a second on Gunong Tampin in Negri Sembilan (Robinson and Kloss, *supra*). In Java it appears to be fairly common, as also in Lombok, though it does not seem to have been met with in Bali as yet.

The present specimen agrees well with our bird from the Malay Peninsula and with another from Sarawak.

134. *Zoothera andromedae* (Temm.).

Myiothera andromedae, Temm., Pl. Col. ii, no. 392 (1826).

Geocichla andromedae (Temm.); Seebohm, Cat. Birds Brit. Mus. v, p. 163 (1881); Hartert, Nov. Zool. iii, pp. 555, 593 (1896).

Zoothera andromeda, Sharpe, Hand-list Birds, iv, p. 138 (1903).

a-e. 1 ♂ ad., 1 ♂ imm., 3 ♀ imm. Korinchi Peak, Sumatra, 7,300 feet. 25th April-10th May, 1914. [Nos. 1160-1, 1483-4, 1509.]

"Adult male:—Iris brown, bill black, pale yellow at gape, feet purplish slate."

"Immature female:—Iris hazel, bill greyish horn, feet purplish pink."

These birds inhabited dark and narrow gullies, choked with vegetation, in the neighbourhood of our second camp on

the peak, and were very hard to obtain. Unfortunately, in the absence of careful inspection and until we secured the only fully adult bird obtained, we thought that we were only dealing with young birds of *Cichloselys sibirica*, though we were surprised to find that species, reputed migratory, breeding on the mountain. We did not meet with it higher on the peak. Nearly all birds of this species obtained seem to be young, this having been the case with Doherty and Everett in the lesser Sunda Islands, as well as ourselves. The young birds have the feathers of the head and mantle with buff shaft stripes and the greater wing coverts tipped with orange buff. On the under surface all the feathers are regularly edged with black and are washed subterminally with pale buff. In the adult the breast is uniform clear grey, the middle of the belly almost pure white and the diamond shaped scale-like edgings to the flank feathers very clear and distinct. Comparison of the only adult with two recently obtained in Western Java discloses no material differences though the Sumatran bird has a slightly larger bill.

The generic separation of this section with elongated, compressed and strongly hooked bill seems well justified.

The species is an addition to the fauna of Sumatra, though it has been recorded from the off-lying island of Engano by Salvadori.

135. *Cichloselys sibirica* subsp. *davisoni* (Hume).

Turdus sibiricus, Pall., Reis. Russ. Reich. iii, p. 694 (1776); Wardl. Rams., P. Z. S. 1880, p. 16; Vorderman, Nat. Tijds. Nederl. Ind. xlix, p. 409, no. 360 (1889).

Geocichla sibirica, Seebohm, Cat. Birds Brit. Mus. v, p. 180 (1881); Buttkofer, Notes Leyden Mus. ix, p. 70 (1887).

Oreocinclla inframarginata, Blyth, Journ. Asiat. Soc. Bengal. xxix, p. 106 (1860).

Geocichla davisoni (Hume), Stray Feath. v, pp. 63, 136 (1877); Seebohm, Bull. Brit. Orn. Club, iv, p. xix, (1895); Sharpe in Seebh. Monogr. Turdidae, p. 101, pl. xxi (1898); Ogilvie Grant, Fascic. Malay. Zool. iii, p. 78 (1905).

Cichloselys sibiricus, Robinson, Journ. Fed. Malay States Mus. ii, p. 206 (1909).

Cichloselys mutabilis, Temm.; Vorderman, op. cit. p. 409, no. 361 (1889).

a. 1 ♂. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 28th March, 1914. [No. 494.]

b-g. 3 ♂, 1 ♂ imm., 2 ♀. Korinchi Peak, Sumatra, 7,300 feet. 24th-28th April, 1914. [Nos. 1112-3, 1118-9, 1158, 1233.]

h-i. 1 ♂, 1 ♀. Korinchi Peak, Sumatra, 9-10,000 feet. 29th April, 1914. [Nos. 1277-8.]

"*Adult male* :—Iris hazel, bill black, tarsi yellowish brown, more yellowish posteriorly.

Adult female :—Iris hazel, bill black, lower mandible mottled with yellow, the tomia yellow, feet yellow."

We only met with this species for three or four days on the Peak, after which it disappeared, evidently on migration to the breeding grounds. All the specimens were loaded with fat.

Examination of this series and a considerable number from the mountains of the Malay Peninsula, collected during the winter months, shows that the birds found in Sumatra and the Malay Peninsula are identical and are to be referred to *Turdulus davisoni*, Hume, originally described from Muleyit in Central Tenasserim.

Cichloselys davisoni is distinguished from the nearly allied *C. sibirica* by having the general colour of the male slaty black, not bluish grey, by the absence of white in the centre of the abdomen, by the lesser amount of white in the under tail coverts and by the diminished extent of the white tips to the tail coverts. Females of both forms very closely resemble each other and can only be separated by the smaller amount of white in the tail feathers.

The range therefore of the two forms as given by Sharpe and others is hardly correct, at least so far as winter quarters are concerned. Both species, if we are to trust the categorical accounts of Hume, winter in the Burmese provinces. A large series recently collected in western Java is indubitably *C. sibiricus*, while all Malayan and Sumatran specimens that have passed through our hands are as certainly *C. davisoni*, which appears to reach Sumatra via the Malay Peninsula, as we have obtained it on small islets in the Straits of Malacca.

Some uncertainty attaches to the correct name for the present form. Blyth described a single female from the Andamans as *Geocichla inframarginata* in 1860, and if, as seems probable, examination should prove it to belong to the race we are now dealing with, Blyth's name will have to be used. Until Blyth's type, which is presumably in Calcutta, has been examined, we prefer to use the present name to which no ambiguity attaches.

136. *Oreocinclla aureus* subsp. *horsfieldi* (Bp.)

Turdus varius, Horsf. (nec Pallas), Trans. Linn. Soc. xiii, p. 149 (1821); id. Zool. Res. Java, plate (1822).

Oreocinclla horsfieldi, Bp., Rev. et Mag. Zool. p. 205 (1857); Whitehead, Explor. Kina Balu, p. 258 (1893), (Tosari, E. Java).

Geocichla horsfieldi, Seebohm, Cat. Birds Brit. Mus. v, p. 153, Pl. X. (1881); Hartert, Nov. Zool. iii, pp. 555, 593 (1896).

Oreocincla horsfieldi affinis, Richmond, Proc. Biol. Soc. Washington, xv, p. 158 (1902), (Trang, N. Malay Peninsula).

a-i. 3♂, 1♂imm., 3♀, 2♀imm. Korinchi Peak, Sumatra, 7,300 feet. 23rd April-6th May, 1914. [Nos. 1098, 1116, 1120, 1184-5, 1317, 1349, 1372, 1433.]

j-k. 1♂, 1♀. Korinchi Peak, Sumatra, 10,000 feet. 28th April, 1914. [Nos. 1258-9.]

"Adult female:—Iris hazel, upper mandible horn, lower bluish horn, yellowish at gape and tomia, darker at tip, feet brownish flesh." [No. 1258.]

"Immature female:—Iris hazel, bill plumbeous horn, yellow at gape, feet brownish pink, tinged with yellow."

This species has not hitherto been recorded from Sumatra, but as the synonymy shows, is known from East and West Java, from Lombok, from the mountains of the northern (Siamese) portion of the Malay Peninsula and doubtfully from Bali, though as a matter of fact it is almost certain to occur there (*Stresemann, Nov. Zool. XX*, p. 366 (1913)).

The Northern Peninsula bird has been described as subspecifically distinct, but in view of the fact that the type is unique and the differences are extremely minute, the validity of the form cannot be regarded as established. From about the level of our camp at 7,300 up to over 10,000 feet this very handsome thrush was fairly abundant though rather shy. The note was that of the English song thrush, though rather harsher, and the bird kept almost exclusively to the ground, only flying up into low shrubs when alarmed.

Immature birds differ from the adults in having the black markings on the lower surface less clearly defined and in the greater predominance of the subterminal ochreous band on the feathers of the upper parts. The golden ochreous tips to the wing coverts are also much more pronounced.

The dimensions of the series of eleven birds, all of which are practically full grown, though all are not fully adult, are as follows, that of the type of *Oreocincla affinis horsfieldi*, Richmond, being placed in brackets for comparison.

Total length, 265-278 (267 mm.). Wing, 134-140 (142). Tail, 95-112 (93 mm.). Bill from gape, 31-35 (30.5 mm.). Tarsus, 30-33 (34 mm.).

In all our specimens the 3rd, 4th and 5th primaries are practically equal and longest.

We have also compared the Sumatran series with nine specimens from various heights on the Gedeh and Pangerango Volcanoes, Western Java, which are practically topotypes of the species and can, after allowing for the greater freshness of the Javan skins, detect no differences, a slightly more olivaceous tinge being apparent in three very adult Javan birds.

There is certainly no tangible difference in the dimensions, those of three very adult birds from the Gedeh being:—

Total length, 285, 277, 277 mm. Wing, 143, 142, 141. Tail, 108, 108, 107. Tarsus, 35, 35, 37. Bill from gape, 37, 36, 35.

In the Javan birds the 3rd, 4th and 5th primaries are subequal and longest, and the 2nd primary is slightly longer than the 6th.

This thrush is an interesting addition to the Fauna of Sumatra, emphasizing its direct connection with Java and the Tenasserim mountains. The genus is absent from Borneo.

137. *Turdus indrapuræ*, Robinson & Kloss.

Turdus indrapuræ, Robinson & Kloss, Journ. Straits Branch Roy. Asiat. Soc. No. 73, p. 277 (1916).

Very closely allied to *Turdus fumidus*, S. Müll. from the Gedeh, West Java, but distinguished by having the general colour of the upper parts and of the throat and upper breast dark earthy brown, distinctly paler on the cap, whereas in *T. fumidus* the mantle is dark bronzy grey, tinged with olivaceous, with the cap blackish, distinctly darker than the rest of the upper parts. Belly and flanks earthy chestnut, richer in tint than the corresponding parts of *T. fumidus*, centre of belly and anal patch whitish, under tail coverts blackish brown, with narrow shaft stripes white, tinged with buff, these shaft stripes being narrower than in *T. fumidus* but broadening to the tip.

Total length (measured in flesh). *Male*: 242; wing, 122; tail, 110; tarsus, 32; bill from gape, 25.

Female: Total length, 242; wing, 122; tail, 103; tarsus, 30; bill from gape, 27 mm.

Types. Male. Collected on Korinchi Peak, 10,000 feet. April 27th, 1914. [No. 1196.]

Female. Collected on Korinchi Peak, 10,000 feet. April 20th, 1914. [No. 1274.]

The majority of the large series collected have the top of the head ashy grey so that the species appears very markedly capped. This is, however, in the main due to the effect of wear. The large majority of the specimens are in very worn plumage, but where new feathers are appearing on the head these are but little lighter than those of the mantle.

The differences between the two forms are difficult to put into words but are appreciable at a glance in the series before us of over 29 Sumatran skins and a series of sixteen topotypes of *T. fumidus*. On the whole the present form would appear to be intermediate between *T. fumidus* and *T. seebohmi* of Kina Balu, which is, however, a very much darker bird.

a-a'. 14♂ ad., 1♂ imm., 10♀ ad., 2♀ imm. Korinchi Peak, 9,500-11,000 feet. 28th April-8th May, 1914. [Nos. 1196-8, 1256-7, 1274-6, 1333-5, 1352-5, 1392-5, 1441-4, 1425, 2093-5.]

Expedition to Korinchi:

"*Adult male and female*:—Iris dull brown, eye ring pale chrome, bill Naples yellow, feet brownish yellow.

Immature female:—Iris dull brown, orbital ring yellow, bill yellow, upper mandible yellowish horn, feet yellowish flesh."

This ouzel was almost entirely confined to the heathy zone of the mountain, only spreading downwards into the forest to a lower limit of about 9,500 feet, below which it was never met with. Its superior limit appeared to be that of vegetation in the neighbourhood of 11,000 feet. Within this narrow altitudinal belt it was extraordinarily abundant and fairly tame. It was generally found singly or in pairs, though occasionally three or four, presumably a family party, were found together. We never heard it utter any particular song, though it had a harsh, disagreeable cackling note when alarmed.

No ouzel of this type has been with certainty obtained in Sumatra, though Bonaparte, followed by other authors, has recorded *Turdus fumidus*, the only certain localities for which are the Volcanoes Gedeh and Pangerango in Western Java, whence we have obtained large series.

Adult males and females are almost exactly alike, the females having the chestnut of the belly perhaps a little paler than the male. Immature birds have the under tail coverts with broad whitish buff shaft stripes; the feathers of the mantle with narrow buff shaft stripes and the throat, chest and upper belly mingled buffy chestnut and black, producing a spotted effect.

There are several ouzels of this group all living at great elevations on the high mountains of islands in the Eastern archipelago, viz.,

Turdus (Merula) seebohmi, Sharpe, Ibis, 1888, p. 386.

Kina Balu and the mountains of Northern Sarawak.

Distinguished at once from all its allies by the much darker colour of the dark parts of the plumage.

Turdus (Merula) celebensis, Buttkofer, Notes Leyden Museum xv, p. 109 (1893).

Mountains of South Celebes.

Chestnut colour on belly rich and very extensive.

Turdus (Merula) javanica, Horsf., Trans. Linn. Soc. xiii, p. 148 (1821).

Mountains of Central Java.

Chestnut of the belly paler, not extending to the flanks, anal patch white and shaft stripes of the under tail coverts also white.

Turdus (Merula) whiteheadi, Seebohm, Bull. Brit. Orn. Club. i, p. xxv (1893).

Mountains of East Java.

Distinguished by its white head and restricted chestnut on the belly.

It is somewhat doubtful if this species will prove to be really distinct from *T. javanica*. As the present series shows, there is a distinct tendency for the feathers of the head of these birds to bleach under the effects of abrasion against the stiff coriaceous leaves of the *Vaccinium* amongst which they feed.

Turdus (Merula) schlegeli, Schater, Ibis, 1861, p. 280.

Mountains of Timor.

Paler above, *no white* on the middle of the belly or vent or on the shafts of the under tail coverts.

Turdus (Merula) fumidus, supra.

Mountains of West Java.

Chestnut of belly in most cases spreading to the flanks though in some specimens these are partially sooty brown, like the upper breast. Head in freshly moulted specimens darker than the rest of the upper plumage which is greyish black, with an olivaceous pale mesial line on the abdomen and a whitish anal patch. Under tail coverts always with narrow white shaft lines and small white tip; though in very old specimens these are much reduced.

The present series of twenty-four fully adult birds is probably far larger than any of the allied species obtained from any one locality and the degree of variability shown, which however is in the main due to the stage of wear of the plumage, throws a certain amount of doubt on the validity of the species described from various peaks of the Sondaic Chain from Sumatra to Timor. The forms in any event have no claim to rank as more than subspecies, though the absolute isolation involved by residence on a volcanic peak above 10,000 feet might be expected to induce a certain amount of variation.

Korinchi Peak is very steep, and the area above 10,000 feet covered by vegetation which would support life must be very limited and can certainly not exceed a very few square miles, so that the distribution of this bird is extraordinarily limited.

138. *Henicurus velatus*, Temm.

Henicurus velatus, Temm.; Salvad. Ann. Mus. Civ. Gen. xiv, p. 234 (1879); Nicholson, Ibis, 1883, p. 250; Snelleman in Veth's Midden-Sumatra Exped. Vogels, iv, p. 40 (1884); Buttikofer, Notes Leyden Mus. ix, p. 69 (1887); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 410, no. 372 (1889).

Hydrocichla velatus, Sharpe, Cat. Birds Brit. Mus. vii, p. 320 (1883); Stone, Proc. Acad. Nat. Sci. Philad. liv, p. 684 (1902).

- a-k.* 4 ♂, 7 ♀. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 15th March-19th May, 1914. [Nos. 149, 187, 254, 321-2, 394, 458-9, 466, 1598, 1600.]
- l-o.* 1 ♂, 3 ♀. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. 6th-20th April, 1914. [Nos. 683, 782, 1039-40.]
- p.* 1 ♀. Korinchi Peak, Sumatra, 7,300 feet. 23rd April, 1914. [No. 1094.]
- q.* 1 ♂. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 1st June, 1914. [No. 1837.]
- r-t.* 1 ♂, 2 ♀. Barong Bharu, Barisan Range, West Sumatra, Lat. 2° S. 4,000 feet. 4th-9th June, 1914. [Nos. 1907, 1948, 1953.]

"Iris hazel, bill black, feet whitish pink."

Very common on shady streams, especially where the current was swift, but not seen much in the open valley. Shy and very rapid and restless in their movements, flitting about generally in pairs from rock to rock with a curiously jerky action. The note is a shrill acid whistle and is constantly uttered.

139. *Henicurus frontalis*, Blyth.

Henicurus frontalis, Blyth, Journ. Asiat. Soc. Bengal, xvi, p. 156 (1847); Tweed. Ibis, 1877, p. 310; Buttkofer, Notes Leyden Mus. ix, p. 68 (1887); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 410, no. 374 (1889).

Hydrocichla frontalis, Sharpe, Cat. Birds Brit. Mus. vii, p. 321 (1883); Stone, Proc. Acad. Nat. Sci. Philad. liv, p. 684 (1902).

- a-b.* 1 ♂, 1 ♀. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. 5th-18th April 1914. [Nos. 671, 1011.]

"Iris hazel, bill black, feet flesh pink."

In habits similar to the preceding but very much rarer, as these two specimens were the only ones we were able to obtain.

140. *Cochoa beccarii*, Salvad. (Plate V, fig. 3.)

Cochoa beccarii, Salvad. Ann. Mus. Civ. Gen. xiv, p. 228 (1879); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 405, no. 327 (1889).

- a.* ♂ ad. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. 10th May, 1914. [No. 1567.]
- b.* ♂ ad. Barong Bharu, Barisan Range, West Sumatra, Lat. 2° S. 4,000 feet. 7th June, 1914.

"Iris (?), bill black, feet brownish black, orbital region (in fresh skin) red."

These two examples were obtained by our Dyaks in our absence, so that the specimens were not examined in the flesh. They were shot in one instance on the ground, in the other among low shrubs. We observed the remains of one killed by some predaceous bird or mammal in the neighbourhood of Sungei Kumbang, but the bird must be very rare, as these are the only specimens obtained since the original types were collected by Beccari on Mt. Singgalang thirty-five years ago.

The two specimens are perfectly adult and agree well with each other and with the original description.

Entire undersurface, tail coverts, mantle, back, scapulars, upper tail coverts and sides of the head, lores and a narrow superciliary line, glossy black. Cap and nape, purplish lavender, the nape feathers interspersed with long, blackish, hair-like plumes. Median tail feathers dull bluish except for a narrow black tip. Other tail feathers bluish on the outer webs, with a broad black tip, the outermost pair entirely black. Inferior aspect of the tail uniformly black. Bastard wing and two outer primaries entirely black, remainder and the secondaries with the base of the outer web greyish blue, increasing in extent towards the inner secondaries. Lesser upper wing coverts glossy black, median wing coverts greyish silvery blue, narrowly tipped with black, the inner webs of the outermost ones black. Quill lining, under wing coverts and axillaries black.

Dimensions (in skin): total length, 256, 255; wing, 149, 141; tail, 123, 126; tarsus, 29, 29; bill from gape, 31, 31 mm. The measurements of the type as given by Salvadori were: total length, 280; wing, 140; tail, 115; tarsus, 30; bill (culmen) 20 mm.

The affinities of this fine species are evidently with *C. purpurea*, Hodgs. of the Himalayas, which occurs as far south as Mt. Muleyit in Tenasserim. From this species it is, however, at once distinguished by the deep shining black of the mantle and under surface. It is a very much larger bird than *C. azurea*, of Java.

141. *Larvivora cyanea* (Pall.).

Motacilla cyanea, Pall.; Reis. Russ. Reichs. iii, p. 697 (1776).

Larvivora cyanea (Pall.); Oates, Faun. Brit. Ind. Birds, i, p. 181 (1889); Robinson, Journ. Fed. Malay States Mus. ii, p. 207 (1909).

Erithacus cyaneus (Pall.); Seebohm, Cat. Birds Brit. Mus. v, p. 303 (1881).

a. 1♂. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 16th March, 1914. [No. 180.]

A single fully adult male.

The species, curiously enough, does not seem to have been hitherto recorded from Sumatra itself, though we have obtained it from the Aroa Ids. off the east coast (Journ. Fed. Malay States Mus. ii, p. 15 (1906). In the Malay Peninsula it is exceedingly common from September to May, though possibly it does not reside throughout the year.

In habits the bird is a ground chat, having the manners of *Brachypteryx* and *Notodela*, though it is not so strictly terrestrial as either of these genera. It cannot, we think, be correctly placed with the Robins, as has been done by Seebohm, insomuch as the nestlings and quite young birds have not a spotted plumage.

142. *Notodela diana* subsp. *sumatrana* nov.

a-i. 6♂, 3♀. Sungei Kumbang, Korinchi, Sumatra, 4,600 feet. 31st March-16th April. [Nos. 531, 559, 598, 721-2, 828-9, 903, 947.]

"Iris hazel, bill black, feet dark purplish slate."

Males:—Duller than *Notodela diana diana* of Java and with the white neck spots and frontal area larger. The general colour of *diana* may be described as dark "indigo blue;" that of *sumatrana* as "dark Payne's grey" (Ridgway).

Females:—Brown of upper parts perhaps a little deeper than in Javanese birds, the throat darker and the fore-neck without the ill-defined pale greyish patch.

Types:—Adult male from Sungei Kumbang, Korinchi, 4,700 feet. Collected on 2nd April, 1914, by H. C. Robinson & C. Boden Kloss. [No. 559.]

Total length, 152; wing, 79; tail, 67; bill from gape, 17; tarsus 28.5 mm.

Adult female:—Same locality, etc., collected on 12th April 1914.

Total length, 140; wing, 77; tail, 60; bill from gape, 18.5; tarsus, 25 mm.

The habits of this species are exactly those of the species of *Brachypteryx*. It is found in pairs among thick undergrowth, or fallen timber, and never comes into the open. We only found it in the zone between 4-5,000 feet, where it was fairly common but not nearly so abundant as *Br. leucophrys*.

The genus is new to Sumatra but the Himalayan form, *N. leucura* (Hodgs.) is met with on the mountains of Central Perak, Malay Peninsula.

143. *Copsychus saularis* subsp. *musicus* (Raffles).

Lanius musicus, Raffles, Trans. Linn. Soc. xiii, p. 307 (1821).

Copsychus musicus (Raffles), Salvad., Ann. Mus. Civ. Gen. xiv, p. 236 (1879); Nicholson, Ibis, 1882, p. 60; Buttkofer, Notes Leyden Mus. ix, p. 69 (1887).

Copsychus saularis (part), Sharpe, Cat. Birds Brit. Mus. vii, p. 61 (1883).

Copsychus mindanensis, Snelleman in Veth's Midden Sumatra Exped. Vogels. iv, p. 40 (1884).

a. 1 ♂. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 26th May, 1914. [No. 1689.]

"Iris hazel, bill and feet black."

Fairly common in the open land of the Korinchi Valley, but not nearly so abundant as in the Malay Peninsula.

Malayan specimens differ slightly from the Sumatran race in having the under wing coverts more broadly margined with white, thus intergrading with *C. saularis saularis*, which appears to extend southwards to the north of Tenasserim.

Kittacincla macrurus subsp. *macrurus* (Gm.).

Cittocincla macroura (Gm.); Tweedd., Ibis, 1877, p. 309; Salvad., Ann. Mus. Civ. Gen. xiv, p. 236 (1879); Nicholson, Ibis, 1882, p. 60; Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 408, no. 355.

Cittocincla tricolor (Vieill.); Sharpe, Cat. Birds Brit. Mus. vii, p. 85 (1883); Buttikofer, Notes Leyden Mus. ix, p. 69 (1887).

Kittacincla macrurus macrurus, Hartert, Nov. Zool. ix, p. 572 (1902); Parrot, Abh. Konigl. Akad. Bayer der Wissensch. II, Kl. XXIV, Bd. I, p. 249 (1907).

a, b. 2 ♂. Pasir Ganting, West Coast of Sumatra, Lat. 2° S. 18th-19th June, 1914. [Nos. 2012, 2031.]

"Iris dark, bill black, feet pinkish flesh."

These specimens can be matched perfectly with others from S. E. Siam, the nearest locality available to Pulau Condor, the type locality of the species. They also agree well with others from the more northerly parts of the Malay Peninsula, but are rather lighter in colour beneath and have shorter tails than the majority of birds from the south of the Peninsula and the adjacent small islands. The specimens cited above measured in the flesh. Total length, 280, 295; wing, 95, 95; tail, 163, 170; bill from gape, 24, 25; tarsus, 25, 25 mm.

Fairly common on the shore among Casuarinas at Pasir Ganting but not found in Korinchi.

144. *Cettia sumatrana*, Ogilvie Grant. (Plate VII, fig. 4 "*Cettia montana*.")

Sylvia montana, Horsf. Trans. Linn. Soc. xiii, p. 156 (1821).

(?) *Luscinola fuliginiventris*, Nicholson (nec Hodgs.) Ibis, 1883, p. 129.

Cettia sumatrana, Ogilvie Grant, Bull. Brit. Orn. Club, xxxvi, p. 66 (1916).

a-k. 5♂, 6♀. Korinchi Peak, Sumatra, 7,300 feet.
24th April-15th May, 1914. [Nos. 1127-9,
1139-40, 1193, 1211, 1249, 1310, 1440, 1549.]

l-r. 3♂, 3♀, 1♀ imm. Korinchi Peak, Sumatra,
8-11,000 feet. 27th April-9th May, 1914.
[Nos. 1195, 1282-3, 1340, 1370, 1405, 1424.]

"Iris hazel, bill dark horn, gape and basal half of lower mandible yellow, feet brown."

Nos. 1340 (male) and 1193 (female), types of the species.

This little warbler did not occur below about 7,000 feet and ranged higher than any other vertebrate on the peak, one specimen having being shot at rather over 11,000 feet at the limit of vegetation.

Though not at all shy, like all birds of its group it was very skulking in its habits and ran about near the ground among dense vegetation and rubbish and was consequently rather hard to get.

Young birds have the belly, under wing coverts and axillaries washed with pale sulphur yellow and in all the superciliary stripe, which runs from the lores to well behind the eye, is well marked and somewhat tinged with buff.

We have little doubt that the bird obtained by Dr. H. O. Forbes in the crater of the Dempo at 9,000 feet and identified by Nicholson (loc. cit.) to be *Luscinola fuliginiventris* is really referable to this species, which has only ten tail feathers and must therefore be a *Cettia*.

The present species is close to *Cettia oreophila*, of Kina Balu, as well as to *Cettia montana* of Java, with which we have compared it and from which we have found it to differ mainly in richer colouration.

The first primary is about half the length of the second, which is much shorter than the third. The 5th, 6th and 7th are about equal and longest and the 10th is about equal to the third.

The dimensions of the series are very constant, the wing being 48-55 mm. and the tarsus 21, 25, most specimens being wing 53 and tarsus, 22 mm., practically the same dimensions as given by Hartert for his specimens of *C. montana* from the Arjuno, East Java.

The genus has not hitherto been recorded from Sumatra.

(This bird was figured as *Cettia montana* (Horsf.) before it was possible to compare it with material which showed it to be distinct).

145. *Orthotomus ruficeps* (Less.).

Orthotomus ruficeps (Less.); Sharpe, Cat. Birds Brit. Mus. vii, p. 224 (1883); Vorderman, Nat. Tijds. Nederl. Ind. xlix, p. 407, no. 346 (1889).

- a. 1 ♀ imm. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 24th May, 1914. [No. 1638.]

"Iris pale hazel, bill corneous above, pale pinkish beneath, tarsi and feet brownish flesh, the former paler behind."

A quite immature specimen, with the tail blackish-brown and the head earthy, with a strong suffusion of chestnut.

146. *Cisticola cisticola* (Temm.).

Cisticola cisticola (Temm.); Sharpe, Cat. Birds Brit. Mus. vii, p. 259 (1883); Salvad., Bull. Mus. Zool. Turin. xi, p. 10 (1896).

Cisticola cursitans, Vorderman, Nat. Tijds. Nederl. Ind. xlix, p. 408 (1889).

- a, b. 2 ♂. Sungei Penoh, Korinchi Valley, Sumatra, 2,700 feet. 9th March 1914. [Nos. 18, 19.]

- c-g. 2 ♂, 1 ♂ imm., 2 ♀. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 28th-29th May, 1914. [Nos. 1712, 1714-6, 1746.]

"Iris hazel, bill pinkish horn, darker on culmen and tip, feet brownish pink."

This little grass warbler was fairly common among the growing rice, flying in pairs and small parties of five or six, but was very hard to get as its habits were very skulking. It evidently breeds in the valley, as one very young bird, indicated by the yellowish wash on the under parts and the very strongly streaked head was obtained on May 28th.

147. *Phylloscopus borealis* (Blas.).

Phylloscopus borealis (Blas.); Seebohm, Cat. Birds Brit. Mus. v, p. 40 (1881); Salvad., Ann. Mus. Civ. Gen. (2) xii, p. 68 (1891).

- a. 1 ♂. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. 17th April, 1914. [No. 977.]

"Iris hazel, bill horn, yellowish at base, feet brownish, tinged with yellow."

Though this willow warbler must be common in Sumatra in the winter months and on migration in the spring and autumn, we can only find on record two specimens obtained by Modigliani at Balige on Lake Toba in Central Sumatra, in November.

148. *Phyllergates cucullatus* subsp. *sumatranus*, Salvad.

Phyllergates sumatranus, Salvad., Ann. Mus. Civ. Gen. ser. 2a. xxi, p. 67 (1891).

Orthotomus cucullatus, Nicholson, Ibis, 1883, p. 248; Vorderman, op. cit. p. 407, no. 345.

a-g. 5♂, ♀, ♀ imm. Sungei Kumbang, Korinchi, Sumatra, 4,600 feet. 4th-16th April. [Nos. 649, 650, 744-5, 787, 821, 954.]

h. ♂. Korinchi Peak, Sumatra, 7,300 feet. April 20th. [No. 1268.]

"Iris hazel, bill black, yellowish at base and on parts of lower mandible, feet yellowish brown."

Living in undergrowth and low bushes in dense jungle, generally moving about in pairs, searching the branches for insects, etc. Very active and extraordinarily fearless, uninjured specimens being consequently somewhat difficult to procure.

Salvadori separated this form from the Javan *P. cucullatus* on the assumption that the adult bird possessed a dark green pileum, which the present series shows not to be the fact. The form, however, agrees with *P. c. cinericollis*, Sharpe, from Kinabalu, in the possession of a dark grey collar on the hind neck, but differs slightly in the deeper, more chestnut tint of the pileum, in the darker green of the upper parts and in the richer yellow of the flanks and abdomen. There is no trace of white edgings to the outer tail feathers, which are ten and not twelve in number as surmised by Salvadori (*loc. cit.*)

Both Sharpe (Hand-list Birds, iv, p. 237 (1903), and Hartert (Nov. Zool. iv, p. 518 (1897), include the Malay Peninsula within the range of the Indian species, *Ph. coronatus* (Jerd. and Blyth), but we are unaware of any authentic specimens of this species from south of Muleyit in Tenasserim. Of the considerable series of *P. cinereicollis* in the F.M.S. Museums, three from the Semangko Pass, Selangor-Pahang boundary; Telom, Perak-Pahang boundary and Gunong Tahan, have traces of a white edging to the inner webs of the outer tail feathers, in all cases not nearly reaching to the shaft. Others from the same localities have the tail entirely without white. According to Hartert's Key to the species (*loc. cit.*), the three above mentioned specimens would belong to his *Ph. c. philippinus*, but a more reasonable explanation is that the white on the tail is an atavistic character occasionally appearing amongst the forms normally without it.

149 *Suya superciliaris* subsp. *albigularis*, Hume.

Suya albigularis, Hume, Stray Feath. i, p. 459 (1873); id. op. cit. ix, p. 227 (1880); Nicholson, Ibis, 1883, p. 250, Pl. X, fig. 1; Sharpe, Cat. Birds Brit. Mus. vii, p. 182 (1883); Salvad., Ann. Mus. Civ. Gen. (2) xii, p. 68 (1891).

Drymoipus albigularis, Hume; Vorderman, Nat.-Tijd. Nederl. Ind. xlix, p. 408, no. 354 (1889).

a-h. 3 ♂ ad., 1 ♂ imm., 4 ♀ ad. Sungei Penoh, Korinchi Valley, Sumatra, 2,700 feet. 9th-12th March, 1914. [Nos. 6, 17, 44-7, 68-9.]

i-k. 2 ♂ ad., 1 ♀ ad. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 15th-28th March, 1914. [Nos. 151, 250, 491.]

l. 1 ♀ imm. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. 22nd April, 1914. [No. 1088.]

m-p. 3 ♂ ad., 1 ♀ ad. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 24th May. [Nos. 1625-8.]

"*Adult*: Iris pale greenish, yellow or white, bill blackish, pinkish beneath, feet brownish pink.

Immature; bill corneous, yellow beneath, feet purplish brown."

Very common amongst the growing rice, reeds and river side vegetation, throughout the Korinchi Valley and also in the swamp near Sungei Kumbang, uttering a low but pleasant twittering note.

The series collected, which are in fairly fresh plumage, are very uniform, the only variations being in the amount of black edging to the feathers of the sides of the chest and in the white stripe from over the eye to the lores, which in many specimens is practically obsolete.

Suya waterstradti, Hartert, Nov. Zool. ix, p. 568 (1902), is the nearest ally to this species, but differs in being a slightly smaller and much darker coloured bird, the black edgings to the feathers of the breast being much more strongly developed. The white superciliary stripe, which does not seem to have been present in the original type of *S. waterstradti*, is quite as pronounced in the majority of the large series in the F.M.S. Museums as it is in the present species.

***Burnesia flaviventris* (Deless.).**

Burnesia flaviventris (Deless.); Sharpe, Cat. Birds Brit. Mus. vii, p. 204 (1883).

Prinia rafflesi, Tweedd., Ibis, 1877, p. 311, Pl. vi, Fig. 1.

Prinia hypoxantha, Salvad., Ann. Mus. Civ. Gen. xiv, p. 235 (1879).

a. 1 ♂. Pasir Ganting, West Sumatran Coast, Lat. 2° S. 18th June, 1914. [No. 2016.]

"Iris red, bill black, feet orange yellow."

This specimen, which is in rather shabby plumage, agrees well with four specimens from Perak and Selangor and it is

evident that Dr. Sharpe was correct in regarding the forms from Sumatra described by Salvadori and Tweeddale as conspecific with Delessert's species originally obtained in Pegu.

Seen also breeding in the rice-fields at Balei Selasa, in the Padang Lowlands, and fairly common in the lalang grass round Pasir Ganting.

Total length, 128; wing, 46; tail, 60; bill from gape 16; tarsus 20.5 mm.

***Tephrodornis gularis* (Raffles).**

Lanius gularis, Raffles, Trans. Linn. Soc. xiii, p. 304 (1822) (nec. auct.).

Lanius virgatus, Temminck, Pl. Col. 256, fig. 1.

a. ♂. Pasir Ganting, Coast of West Sumatra, Lat. 2° S. 22nd June, 1914. [No. 2086.]

"Iris, bill and feet black."

Shot among Casuarinas on the sea shore.

We have compared this specimen with a specimen of the typical *T. virgatus* (Temm.) from South West Java, which we owe to the kindness of Dr. J. C. Koningsberger and except for a slightly whiter forehead in the Javan bird find that they are identical.

Tephrodornis gularis was founded by Raffles on a specimen, almost certainly from Bencoolen, less than a hundred miles south along the coast from Pasir Ganting.

His type, and a drawing of it, were correctly associated with the Javan bird by Horsfield & Moore (*Cat. Birds Mus. E. I. Co.* i, p. 171 (1854)).

When Dr. Sharpe wrote the Catalogue of Birds, Vol. III, he correctly differentiated specimens from Java and the Malay Peninsula, but apparently had no Sumatran specimens available. He seems, therefore, to have assumed that Sumatran specimens on which *gularis* was founded would be identical with Malaccan and not with Javan birds, as is usually the case, but in this he happens to be wrong, though the Malay Peninsula birds also occur in Sumatra east of the main Chain (Buttikofer, Notes Leyden Mus. ix, p. 52 (1887)). We have specimens of it from the neighbourhood of Medan.

The Malay Peninsula birds, with those from East Sumatra last referred to, are totally distinct from the Java-Sumatra species, being very much larger: wing 97-107 against 87: the forehead is markedly white in the West Sumatran bird and the tail and longer upper tail coverts glossy black, not earthy brown.

This being the case and the name *Tephrodornis gularis* becoming restricted to birds from Java and West Sumatra, those from the Malay Peninsula and East Sumatra must be known as *Tephrodornis sordida*, Stoliczka¹, a name that has been

¹ Journ. Asiat. Soc. Bengal, Part II, Physical Science, No. 4 (1870) p. 320.

completely overlooked, under which is given the description of the female from Malacca. It is stated to range northwards to Province Wellesley and Penang.

It is smaller in size than *T. pelvica pelvica*, Hodg., from Nepal, wing not exceeding 107 mm. as against 117 mm. in the northern race. Colour above clearer grey, the mantle not sharply differentiated from the head, centre of belly purer white.

Neo-Type:—F. M. S. Mus. No. 821/07, adult male from Gunong Angsi, Negri Sembilan, Federated Malay States, 2,600 feet. November, 1901.

This form, which is the *T. gularis* auct., occurs throughout the Malay Peninsula from the extreme south to Selangor and in East Sumatra.

Specimens examined:—6 males and 12 females from the Malay Peninsula, and a ♂ and 2 immature birds from East Sumatra.

In the north of the Peninsula this race shows gradation to the typical *T. pelvica* of the Himalayas, but the large series available is sufficiently distinct to merit a name as a new form, which may be known as

TEPHRODORNIS PELVICA subsp. ANNECTENS NOV.

Differs from the preceding subspecies, *T. p. sordida*, in having the mantle brownish, breast and flanks more olivaceous grey, plainly differentiated from the grey cap and nape. From *T. pelvica pelvica* it is at once separated by its distinctly smaller size.

T. pelvica sordida (9 males), w 97-104 mm., mean 100 mm.

„ *annectens* (9 males), w 102-106 mm., 103.3 mm.

„ *pelvica* (6 males), w 111-114 mm., mean 114.3 mm.

Type:—Adult male, Lamra, Trang, No. 453/10, F.M.S. Mus. 12th January, 1910.

Specimens examined:—Nine males and eight females.

The range of this form is from S. Tenasserim to Perlis in the Malay States, though the exact limits north and south cannot, of course, be exactly indicated, as regular gradation takes place over the whole latitudinal range of the species.

Two specimens from Koh Lak, S. W. Siam, have wings of 109-111 mm., and are intermediate between *annectens* and *pelvica*. Their colour does not differ.

Hemipus obscurus (Horsf.).

Muscicapa obscura, Raffles, Trans. Linn. Soc. xiii, p. 146 (1821).

Hemipus obscurus (Horsf.); Salvad. Ann. Mus. Civ. Gen. xiv, p. 209 (1879); Tweedd. Ibis, 1877, p. 313; Sharpe, Cat. Birds Brit. Mus. iii, p. 305 (1877).

Myiolestes obscurus, Vorderman, Nat. Tijds. Nederl. Ind. xlix, p. 399, no. 197 (1889).

a, b. 2 ♂. Pasir Ganting, West Sumatran Coast, Lat. 2° S. 20th-21st June, 1914. [Nos. 2058, 2069.]

"Iris dark, bill and feet black."

Widely spread throughout the Malay Peninsula, Sumatra, Borneo and Java, but never found much above 1,000 or 1,500 feet in the three former countries, being replaced above that level by *H. picatus* (Sykes).

150. *Hemipus picatus* (Sykes).

Hemipus picatus (Sykes); Sharpe, Cat. Birds Brit. Mus. iii, p. 307 (1877); id. Ibis, 1889, pp. 189, 190; Hartert, Nov. Zool. ix, p. 576 (1902); Robinson, Journ. Fed. Malay States Mus. ii, p. 209 (1909).

Hemipus intermedius, Salvad., Ann. Mus. Civ. Gen. xiv, p. 209 (1879); Buttikofer, Notes Leyden Mus. ix, p. 51 (1887); Salvad., Ann. Mus. Civ. Gen. (2) xii, p. 17 (1891).

a-g. 4 ♂, 3 ♀. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 18th-27th March, 1914. [Nos. 219, 236, 275, 427, 432, 477-8.]

h-i. 2 ♀. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. 12th-13th April, 1914. [Nos. 841, 881.]

j. 1 ♂. Korinchi Peak, Sumatra, 7,300 feet. 11th May, 1914. [No. 1490.]

k. 1 ♂. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 27th May, 1914. [No. 1701.]

"Iris hazel, bill black, feet brownish or greyish black."

We have compared the above series of eleven skins with a large series from all parts of the Malay Peninsula from just south of the Tenasserim border to the mountains of Selangor and cannot appreciate the differences relied on by Salvadori to establish his *H. intermedius*, viz., slightly smaller size, greater extent of white on the outer tail feathers and darker tint beneath. The measurements of the Sumatran series taken in the flesh are, total length, 135-143; wing, 60-65; tail, 58-67; tarsus, 12-14; bill from gape, 16-18 mm.

Not very common, being met with, usually in pairs, in secondary growth and on the edges of clearing, perching on outlying branches, like a flycatcher, but not nearly so active in their habits.

151. *Platylophus coronatus* (Raffles).

Lanius coronatus, Raffles, Trans. Linn. Soc. xiii, p. 306 (1822).

Platylophus coronatus (Raffles); Sharpe, Cat. Birds Brit. Mus. iii, p. 318 (1877); Salvad. Ann. Mus. Civ. Gen. xiv, p. 229 (1879); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 412, no. 400 (1889); Stone, Proc. Acad. Nat. Sci. Philad. liv, p. 691 (1902).

a-d. 1 ♂, 3 ♀. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 29th May-1st June, 1914. [Nos. 1759, 1829-30, 1833.]

"Iris red, bill black, feet French grey."

Fairly common in secondary jungle on the lower valley slopes.

152. *Lanius bentet*. Horsf.

Lanius bentet, Horsf., Trans. Linn. Soc. xiii, p. 144 (1821); Raffles, tom. cit. p. 304 (1822); Salvad., Ann. Mus. Civ. Gen. xiv, p. 210 (1879); Nicholson, Ibis, 1879, p. 170; Snelleman in Veth's Midden-Sumatra Exped. Vogels. iv, p. 43 (1884); Buttikofer, Notes Leyden Mus. ix, p. 53 (1887); Gadow, Cat. Birds Brit. Mus. viii, p. 266 (1883); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 399, no. 202 (1889); Salvad., Bull. Mus. Zool. Turin, xi, p. 9 (1896); Hartert, Nov. Zool. ix, p. 208 (1902); Grant, tom. cit. p. 478 (1902); Kloss, Journ. Fed. Malay States Mus. iv, p. 232 (1912).

Lanius schach bentet, Parrot, Abh. Konigl. Akad. Bayer. II, xxiv, Bd. 1, p. 232 (1907).

a-h. 6 ♂, 2 ♀. Sungei Penoh, Korinchi Valley, Sumatra, 2,700 feet. 9th-11th March, 1914. [Nos. 5, 8, 16, 28-9, 50-1, 64.]

i. 1 ♂. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 17th March, 1914. [No. 201.]

j-l. 2 ♂, 1 ♀ imm. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 29th May-5th June, 1914. [Nos. 1743-4, 1873.]

"Iris dark hazel, bill black, feet black or greenish black."

We noticed this handsome shrike in great numbers at Batavia and Buitenzorg in Java, and also in Padang in Sumatra and along the coastal road as far as Tapan, where we branched off into the jungle. On reaching the Korinchi Valley, it was again abundant in the open land throughout the length of the valley, perching on the telegraph wires and on dead branches affording an open view round. It seemed to feed largely on grasshoppers and on more than one occasion we have seen it successfully pursue a Dragonfly. In the jungle country it did not, of course, occur.

Certain variations occur in the width of the black frontal band, one or two specimens having it much wider than others, while the rufous tinge on the flanks is much deeper in some, depending largely on the age of the plumage. The wing measures from 89-94 mm.

Though common in Java and Sumatra this species is exceedingly rare in the southern parts of the Malay Peninsula, appearing occasionally in the winter months, sometimes in considerable numbers, apparently on migration. It is not as yet recorded from the northern parts of the Peninsula.

153. *Lanius lucionensis*, Linn.

Lanius lucionensis, Linn., Syst. Nat. I, p. 135 (1766); Ogilvie Grant, Nov. Zool. ix, p. 483 (1902).

- a. 1 ♀ ad. Siolak Daras, Korinchi Valley, Sumatra,
3,000 feet. 23rd March, 1914. [No. 358.]

"Iris hazel, bill pinkish horn, black on culmen and at tip, feet slate."

A single specimen, probably on migration, was shot in secondary jungle. It had nearly completed its moult into fully adult plumage.

The species has not hitherto been recorded from Sumatra, though it is known from Borneo, while the F. M. S. Museums possess two specimens from the Malay Peninsula, from Pulau Langkawi and Kuala Lumpur respectively, both shot in March. The species is of course perfectly distinct from *L. superciliosus* and *L. cristatus*, with the former of which it has been confounded by Gadow (Cat. Birds Brit. Mus. viii, p. 271 (1883).

154. *Pteruthius aeralatus* subsp. *cameranoi*, Salvad.

Pteruthius cameranoi, Salvad., Ann. Mus. Civ. Gen. xiv, p. 232 (1879); Wardl. Rams. P.Z.S. 1880, p. 16; Salvad., Ann. Mus. Civ. Gen. (2), xii, p. 57 (1891).

Pteruthius aeralatus (Tick.), Sharpe, Ibis, 1887, p. 451; id. op. cit. 1888, p. 419; Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 399, no. 196 (1889).

Ptererythrius aeralatus subsp. *cameranoi*, Gadow, Cat. Birds Brit. Mus. viii, p. 115 (1883).

- a. 1 ♀. Siolak Daras, Korinchi Valley, Sumatra,
3,000 feet. 25th March, 1914. [No. 410.]
- b-f. 5 ♂. Sungei Kumbang, Korinchi, Sumatra,
4,700 feet. 1st-20th April, 1914. [Nos. 539,
840, 907, 986, 1047.]
- g-y. 10 ♂, 1 ♂ imm., 7 ♀. Korinchi Peak, Sumatra,
7,300 feet. 24th April-15th May, 1914.
[Nos. 1115, 1121, 1147, 1150, 1209-10, 1239,
1286-7, 1297, 1300-2, 1439, 1529, 1544-6.]
- x. 1 ♂. Barong Bharu, Barisan Range, West
Sumatra, Lat. 2° S. 4,000 feet. 9th June,
1914. [No. 1946.]

"Iris blue, bill slate, black above, a line passing through nostrils to tip, feet flesh pink or purplish flesh."

Rare below about 6,000 feet, but very common above that limit to over 8,000 feet, flying in small flocks of six or seven individuals, often in company with *Mesia laurinae* and searching fallen timber for insects, etc.

There has been much diversity of opinion on the question as to whether the birds of this species inhabiting the mountains of Sumatra and Borneo are strictly conspecific with the continental form from Tenasserim and the mountains of the Malay Peninsula, which was originally described from Mt. Muleyit in Central Tenasserim.

On comparing eighteen adult males from Sumatra with twelve adults from various parts of the Malay Peninsula from Bandon to Selangor, it is at once seen that the Sumatran birds average very much darker grey than those from the mainland and are also distinctly smaller, the bill very decidedly so. Salvadori's original type had no vinaceous tint on the flanks but this was not the case in a second specimen from Lake Toba, collected by Modigliani. All the present series have this tint more or less developed about equally with the series from the Malay Peninsula. There is no difference whatever in the tint of the upper surface.

The females from Sumatra, besides the difference in size, have the buffy tint of the under surface richer in tone than in those from the Malay Peninsula. It is evident, therefore, that Salvadori was correct in his view that the Sumatran form is distinct from that of the mainland, though we do not think that the differences are more than subspecific. The bird from Kina Balu is probably identical with the Sumatran race.

15. *Parus major* subsp. *malayorum* nov.

Parus cinereus, Gadow, (partim) Cat. Birds Brit. Mus. ix, p. 16 (1883); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 400, no. 206 (1889); Salvad., Ann. Mus. Civ. Gen. (2) xii, p. 57 (1891).

a-d. 1 ♂ ad., 3 ♀ ad. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. 2nd-6th April, 1914. [Nos. 556, 582, 640, 684.]

e-g. 2 ♂ ad., 1 ♀ ad. Korinchi Peak, Sumatra, 7,300 feet. 25th April-14th May, 1914. [Nos. 1132, 1347, 1543.]

h-j. 1 ♂ imm. 2 ♀ ad. Korinchi Peak, Sumatra, 10,000 feet. 27th April-4th May, 1914. [Nos. 1202, 1365, 1404.]

k-m. 1 ♂ ad., 1 ♂ imm., 1 ♀ ad. Barong Bharu, Barisan Range, West Sumatra, 4,000 feet. Lat. 2° S. 9th-11th June, 1914. [Nos. 1913, 1925, 1934.]

"Iris dark, bill black, slaty on tomia, feet slaty blue."

Expedition to Korinchi:

Differs from the Javan race *Parus major cinereus* Vieill (= *atriceps* Horsf., eight specimens examined), in having the flanks, abdomen and breast much greyer, especially the two latter, and with the inner web of the outer tail feathers largely black. Terminal white spot on the tips of the remaining tail feathers either much reduced or absent: white nape markings much reduced or absent when compared with Javanese birds.

Types:—Adult male and female from Sungei Kumbang, Korinchi, 4,500 feet, W. Sumatra. Collected on 1st and 6th April, 1914, by H. C. Robinson and C. Boden Kloss. Original numbers 556 and 684.

Total length ♂, 126; W. 66; T. 64; Bill from gape, 13; Tarsus 17.5.

Total length ♀, 122; W. 61; T. 60; Bill from gape, 14; Tarsus 17.5.

In addition to the series cited from Sumatra we possess two others from the same island, viz:—a female from Suban Ayam on the Bencoolen Mountains, 4,000 feet, collected by Mr. E. Jacobson and a male from Beras Tagi, Batak Lands, obtained by Mr. A. van Heyst: and also five adults and two young birds from the mangrove swamps of Perak and Selangor, west coast of the Malay Peninsula (September and December).

Young specimens from Sumatra have no trace of yellowish green on the mantle, which is slightly in evidence in an immature specimen from Selangor. All agree in having the penultimate tail-feathers almost uniform black or grey, with only a slight white tip, while in two birds from Central India, the penultimate feathers are largely white, and there is also a good deal of white on the next pair inwards; the white nuchal spot is also larger and the lower parts paler.

These latter specimens are from the Pranhita River, South Central India, and are examples of *P. m. mahrattarum* Hart. (Nov. Zool., xii, p. 499 (1905).

This Tit first appeared at our camp on the Sungei Kumbang and was very tame and inquisitive. From that locality up to the limits of the forest at over 10,000 feet it was fairly common, being especially numerous on the trunks of the tree-*Vaccinium* between 9,500 and 10,500 feet.

***Dendrophila frontalis* (Horsf.).**

Sitta frontalis, Horsf., Trans. Linn. Soc. xiii, p. 162 (1821).

Sitta frontalis, Horsf.; Gadow, Cat. Birds Brit. Mus. viii, p. 358. (1883).

Dendrophila frontalis (Sw.); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 400, No. 204 (1889); Hartert, Nov. Zool. ix, p. 212 (1902).

Sitta frontalis hageni, Parrot, Abh. Konigl. Akad. Bayer. II, xxiv, Bd. I, p. 244 (1907).

- a. 1 ♂. Pasir Ganting, West Sumatran Coast, 2° S.
22nd June, 1914. [No. 2079.]

"Iris lemon yellow; orbits sage green, bill orange scarlet, faintly tipped with black, feet brown."

The only one seen, in an orchard near the sea.

There is a great deal of variation among the Indo-Malayan Nut-hatches belonging to this group, and several nominal species exist.

The north Bornean species *Dendrophila corallipes* Sharpe, is separated at once by having the feet vermilion and not brownish, but all the others are very closely allied and differ mainly in the intensity of colouration above and below.

The present bird is not nearly so richly coloured as the majority of those from the Malay Peninsula, which have been separated as *Sitta frontalis saturator*, Hartert (Nov. Zool. ix, p. 573 (1902)); but in the north of the Peninsula others are found which are equally dull coloured. (Robinson & Kloss, Ibis. 1911, p. 70). Apparently the more brilliantly coloured specimens are from the more heavily forested districts. Parrot's race from Banka is not, we think, entitled to separation, the main character relied on being slightly greater size, in which it is practically equalled by the present specimen; total length, 123; wing, 76; tail, 48; bill from gape, 19.5; tarsus, 18 mm.

156. *Poliositta azurea* subsp. *expectata* (Hartert).

Dendrophila azurea (Less.); Salvad., Ann. Mus. Civ. Gen. xiv, p. 211 (1879); Vorderman, Nat. Tijds. Nederl. Ind. xlix, p. 400, no. 205 (1889); Salvad., Ann. Mus. Civ. Gen. (2) xii, p. 57 (1891).

Sitta azurea, Gadow, Cat. Birds Brit. Mus. viii, p. 357 (1883).

Callisitta azurea expectata, Hartert, Bull. Brit. Orn. Club, xxxv, p. 34 (1914).

a-f. 3 ♂, 3 ♀. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 16th-23rd March, 1914.
[Nos. 161, 251, 294-5, 308, 352.]

g-p. 6 ♂, 4 ♀. Sungei Kumbang, Korinchi, 4,700 feet. 31st March-21st April, 1914. [Nos. 522, 644, 854, 868-9, 976, 1055, 1078-80.]

q-w. 2 ♂, 5 ♀. Korinchi Peak, Sumatra, 7,300 feet. 23rd April-14th May, 1914. [Nos. 1091, 1247, 1303, 1305, 1488, 1498, 1592.]

x. 3 ♀. Barong Bharu, Barisan Range, West Sumatra, Lat. 2° S. 4,000 feet. 6th-7th June, 1914. [Nos. 1928, 1932, 1957.]

"Iris whitish, bill feet and orbits lavender, tinged with green."

From the commencement of heavy jungle on the valley slopes up to about 8,000 feet on Korinchi Peak this strikingly coloured little Nuthatch was very common, feeding on tall tree trunks in parties of six or seven. The species ranges from the mountains of the Malay Peninsula, through Sumatra and Java to Timor, but has not hitherto been recorded from the mountains of North Borneo.

No differences in colour are perceptible between the present series and six skins from various mountains of the Malay Peninsula; the bill, however, which averages about 18 mm. from gape appears slightly short.

A very large series recently collected in East and West Java shows that the Sumatran as well as the Malayan birds are, as Hartert states, decidedly darker than the typical form from East Java, while the blue on the outer secondaries is more extensive reaching to the shaft and also to the edge except at the tip. In the East Javan form the blue is entirely surrounded by black.

157. *Corvus enca* subsp. *compiler*, Richmond.

Corvus tenuirostris, Moore, Cat. Birds Mus. E. Ind. Co. ii, p. 558 (1858); Salvad., Ann. Mus. Civ. Gen. xiv, p. 240 (1879); Buttkofer, Notes Leyden Mus. xviii, p. 185 (1896).

Corone enca, Sharpe, Cat. Birds Brit. Mus. iii, p. 43 (1877).

Corvus validus, Snelleman in Veth's Midden-Sumatra Exped. Vogels iv, p. 44 (1884); Buttkofer, Notes Leyden Mus. ix, p. 74 (1887).

Corvus compiler, Richm., Proc. U.S. Nat. Mus. xxvi, p. 518 (1903.)

Corvus enca, Ogilvie Grant, Fascic. Malay. Zool. iii, p. 65 (1905).

a-b. 2 ♂. Sungei Penoh, Korinchi Valley, Sumatra, 2,450 feet. March 10th, 1914. [Nos. 41, 42.]

"Iris dark hazel, bill and feet black."

It is unfortunate that we did not trouble to collect more of these crows, which were fairly common in the neighbourhood of Sungei Penoh, though they were not nearly so abundant either higher up or lower down the valley. They also occurred, though sparingly, in clearings at Sungei Kumbang up to 5,000 feet. There has always been considerable confusion in the nomenclature of this form owing to the fact that the locality of Moore's type was wrongly given as Bombay, where no species of this type occurs.

In his paper on the Birds of Nias, Buttkofer has cleared up the confusion and shown that the Sumatran race, though closely allied to, differs considerably from the typical *enca* from Java in its larger size and more slender and less arched culmen.

The present specimens agree well with his key, having the wings 320-325 mm., again a range for the Javan bird of 265-300 mm. The Malayan birds, of which we have examined seven skins, belong to this form, which can be distinguished at a glance from the more common *C. macrorhynchus* by the absence of throat hackles and the greyish tinge of the feathers of the under surface and by the slender, less deep bill.

158. *Dendrocitta occipitalis* (S. Müll.).

Glaucopis occipitalis, Müll., Tijds. Natuur. Gesch. en Phys. II, p. 343, pl. ix, fig. 1 (1835).

Dendrocitta occipitalis, Sharpe, Cat. Birds Brit. Mus. iii, p. 81, pl. iii (1877); Salvad., Ann. Mus. Civ. Gen. xiv, p. 239 (1879); Nicholson, Ibis, 112, p. 58; id. op. cit. 1883, p. 244; Snelleman in Veth's Midden-Sumatra Exped. Vogels, iv, p. 44 (1884); Buttkofer, Notes Leyden Mus. ix, p. 74 (1887); Vorderman, Nat. Tijds. Nederl. Ind. xlix, p. 411, no. 399 (1889); Salvad., Ann. Mus. Civ. Gen. (2) xii, p. 72 (1891). Parrot, Abh. Konigl. Akad. Bayer. II, xxiv, Bd. I, p. 259 (1907); Hartert, Nov. Zool. ix, p. 215 (1902).

a-f. 3 ♂, 3 ♀. Sungei Penoh, Korinchi Valley, Sumatra, 2,700 feet. 9th-11th March, 1914. [Nos. 9, 21-4, 65.]

g-k. 2 ♂ ad., 1 ♂ imm., 2 ♀. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 12th March-10th May, 1914. [Nos. 114, 230, 446, 1608, 1610.]

l-q. 2 ♂ ad., 3 ♀ ad., 1 ♀ imm. Sungei Kumbaŋg, Korinchi, Sumatra, 4,700 feet. 8th-18th April, 1914. [Nos. 740, 810, 860, 908, 987-8.]

r-u. 3 ♂ ad., 1 ♀ ad. Korinchi Peak, Sumatra, 7,300 feet. 30th April, 1914-13th May, 1914. [Nos. 1289, 1477-8, 1521.]

v-f' 6 ♂ ad., 5 ♀ ad. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 24th May-8th June, 1914. [Nos. 1642-3, 1774-5, 1808-10, 1868-9, 1887-8.]

"Iris carmine, post-ocular skin greenish black, bill black feet brownish black."

"Immature: Iris dark, orbital skin and gape dirty yellow, bill black, feet slaty black."

A very noisy and active bird, with a harsh chattering cry, frequenting the edges of clearings and small open spaces in the jungle from the valley floor to over 7,500 feet, though rather less common at the higher elevations. The plumage suffers much from abrasion and wear and the quite freshly moulted birds have the head almost black, which very quickly fades to an earthy or sooty brown.

Immature birds have the feathers of the posterior part of the crown tipped with whitish and the primary coverts tipped with rufous.

This is an Indo-Himalaic genus, which, though occurring on Kina Balu in North Borneo, is absent from the Malay Peninsula and Java.

159. *Cissa chinensis* subsp. *minor*. Cab.

Cissa minor, Cab., Mus. Hein. 1, p. 86 note (1851); Sharpe, Cat. Birds Brit. Mus. iii, p. 86 (1877); Salvad., Ann. Mus. Civ. Gen. xiv, p. 229 (1879); Nicholson, Ibis, 1883, p. 244; Sharpe, Ibis, 1889, p. 83; Salvad., Ann. Mus. Civ. Gen. (2) xii, p. 65 (1891).

Cissa chinensis, Bodd.; Buttikofer, Notes Leyden Mus. ix, pp. 72, 73 (1887); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 412, no. 401 (1889).

a-f. 3 ♂, 3 ♀. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. 1st April-10th May, 1914. [Nos. 555, 574, 867, 963, 1068, 1568.]

g. 1 ♂. Barong Bharu, Barisan Range, West Sumatra, Lat. 2° S. 4,000 feet. 7th June, 1914. [No. 1897.]

"Iris carmine, bill cherry red, eye wattle and feet vermillion or orange vermillion, claws orange."

This Hunting Crow seems to be confined to a zone from about 4-5,000 feet as we did not come across it either above or below that limit. It was not very common and was a very shy and restless bird, generally met with in pairs. The note was a curious clanking cry in two or three syllables and is the same as that of the Malay Peninsula form.

Cissa jefferyi, (Sharpe, Ibis, 1888, p. 383; id. op. cit. 1889, p. 84, pl. IV), from the higher parts of Kina Balu, North Borneo, seems sufficiently distinct from this form, being distinguished by its much shorter tail, by the absence of subterminal black bars to the tips of the inner secondaries and by the narrowness of the white tips to the tail feathers and the narrow black subterminal bars. The position and validity of *Cissa robinsoni* from the mountains of the Malay Peninsula is, however, rather doubtful. The species was originally described from a single male from Gunong Tahan (Grant, Bull. Brit. Orn. Club, xix, p. 9 (1906); id. Journ. Fed. Malay States Mus. iii, p. 16, Pl. III, fig. 1), and the characters relied on were the indistinctness of the black subterminal bars on the secondaries and the wider white tips as distinguishing it from *C. minor* and the longer tail and more marked subterminal black bars thereto as distinguishing it from *C. jefferyi*.

We have now sixteen specimens from various parts of the Malay Peninsula. Of these, eleven, including one from the original type locality, agree well with the characters cited by

Grant, but one, a male from Gunong Ijau, Perak, has the black subterminal bars on the secondaries quite as strong as in any of the Sumatran specimens.

On the other hand three out of eleven Sumatran specimens have these bars very faint, agreeing with the majority of the Malayan birds, though the tail appears to be rather shorter, not exceeding 180 mm., whereas the tail of *C. robinsoni* may surpass 200 mm.

C. chinensis, from Tenasserim, which we have not seen, is larger, having a wing of about 150 mm., whereas Sumatran and Malayan birds do not exceed 140 mm.

C. thalassina, from Java, is quite a different bird, with no uniform green tail and the inner secondaries with the outer feathers greenish with no trace of black or chestnut.

C. robinsoni, Grant, can therefore only be maintained as a somewhat thin subspecies based on average characters only.

***Dissemurus paradiseus* subsp. *platurus* Vieill.**

Dissemurus paradiseus (Linn.); Sharpe, Cat. Birds Brit. Mus. iii. p. 258 (1877); Snelleman in Veth's Midden-Sumatra Exped. Vogels, iv, p. 42 (1884).

Dissemurus platurus (Vieill.); Salvad., Ann. Mus. Civ. Gen. xiv, p. 208 (1879); Buttikofer, Notes Leyden Mus. ix, p. 50 (1887); Vorderman, Nat. Tijd. Nederl. Ind. p. 399, No. 192 (1889); Salvad., Bull. Mus. Zool. Turin, xi, p. 9 (1896); id. Ann. Mus. Civ. Gen. (2) xii, p. 55 (1891).

Dissemurus paradiseus paradiseus, Parrot, Abh. Konigl. Akad. Bayer. 11, xxiv, Bd. 1, p. 229 (1907).

a. 1 ♀. Pasir Ganting, West Sumatran Coast.
Lat. 2 S°. June 20th, 1914. [No. 2054.]

"Iris red, bill and feet black."

160. *Dicruropsis sumatranus* (Wardl. Rams.).

Dicrurus sumatranus, Wardl. Rams., P.Z.S. 1880, p. 15; Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 399, No. 191 (1889).

Chibia sumatrana, Buttikofer, Notes Leyden Mus. ix, p. 48 (1887).

Dicruropsis sumatrana, Salvad., Ann. Mus. Civ. Gen. (2) xii, p. 55 (1891).

a-d. 3 ♂ ad., 1 ♂ imm. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 16th-24th March. [Nos. 158, 206, 211, 381].

e. 1 ♀ ad. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 25th May, 1914. [No. 1665].

f-h. 1 ♂ ad., 1 ♂ imm., 1 ♀ ad. Barong Bharu, Barisan Range, West Sumatra, Lat. 2° S. 4,000 feet. 4th June, 1914. [Nos. 1922, 1943, 1945].

"Iris carmine, bill and feet black."

Rather rare in scrub and secondary jungle and in clearings, but not found on Korinchi Peak itself.

In the absence of direct comparison it is difficult to say in what respects this species differs from *Chibia borneensis*, (Sharpe, P.Z.S., 1879, p. 246; Ibis, 1889, p. 187), except in the absence of hair-like frontal plumes in even apparently fully adult birds and in the normal outer tail feathers; it is also noteworthy that the white spots on the under wing coverts so characteristic of immature birds of this family are quite undeveloped even in birds that are little more than nestlings.

161. *Buchanga leucophaea* subsp. *phaedra*, Rchnw.

Buchanga leucophaea, Salvad., Ann. Mus. Civ. Gen. xii, p. 208 (1879); id. op. cit. (2), p. 56 (1891).

Dicrurus cineraceus, Horsf.; Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 399, no. 190 (1889); Snelleman in Veth's Midden-Sumatra Exped. Vogels, iv, p. 42 (1884).

Buchanga stigmatops, Sharpe, P. Z. S. 1879, p. 247; Buttikofer, Notes Leyden Mus. ix, 49 (1887); Sharpe, Ibis, 1889, p. 187; Hartert, Nov. Zool. ix, p. 207 (1902).

Buchanga stigmatops phaedra, Reichenow, Wissensch. Ergebn. Deutsch. Tiefsec. Exped. Bd. VII. p. 356 (1904).

a-c. 2 ♂, 1 ♀. Sungei Penoh, Korinchi Valley, Sumatra, 2,600 feet. 9th-11th March, 1914. [Nos. 12, 53, 66.]

d-k. 5 ♂, 3 ♀. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 14th-27th March, 1914. [Nos. 93, 112, 113, 181, 213, 214, 460, 465.]

l-q. 3 ♂, 3 ♂. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. 12th April-12th May, 1914. [Nos. 827, 852, 906, 991, 1070, 1566.]

r, s. 2 ♂. Korinchi Peak, Sumatra, 7,300 feet. 25th April-11th May, 1914. [Nos. 1159, 1491.]

t-v. 2 ♂, 1 ♀. Sandaran Agong, Korinchi Valley, Sumatra, 3,000 feet. 25th-30th May, 1914. [Nos. 1667, 1668, 1779.]

"Iris carmine, occasionally orange, bill black, feet black or powdery black."

This Drongo was very common throughout Korinchi from about 2,000 feet on the western face of the Barisan Range up to about 7,000 feet on the Peak, being commonest at

the lower elevations and in more open country. The habits were very similar to those of other members of the family and the note was the same melodious whistle.

This race, which is apparently extremely close to *C. stigmatops*, originally described from Kina Balu, North Borneo, differs very markedly from the Malayan form, *B. leucogenys*, Walden, and from that found in Java, Lombok and Bali. From the former it is at once distinguished by the smaller size and the darker tint of the grey of upper and lower surfaces and by the restriction of the white on the face to a loreal spot, which is very clearly defined.

B. leucophaea (Vieillot), described erroneously from Ceylon but fixed to Java by Tweeddale (Ibis, 1878, p. 75) has no white at all on the lores.

The form, occurring in East Sumatra and possibly as an occasional visitor to the Malay Peninsula is intermediate between *B. leucophaea phaedra* and *B. leucophaea*.

162. *Bhringa remifer* (Temm.)

Bhringa remifer (Temm.); Sharpe, Cat. Birds Brit. Mus. iii, p. 257 (1877); Battikofer, Notes Leyden Mus. ix, p. 49 (1887); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 399, no. 192 (1889); Ogilvie Grant, Fascic. Malay. Zool. iii, p. 68 (1905).

Dicrurus remifer, Snelleman in Veth's Midden-Sumatra Exped. Vogels iv, p. 42 (1884.)

a-b. 1 ♀, 1 ♀ imm. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 22nd-25th March, 1914. [Nos. 319, 420.]

c-q. 9 ♂, 6 ♀. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. 1st April-8th May, 1914. [Nos. 542, 583, 673-4, 685, 708, 710, 738, 757, 882, 855, 936, 1048, 1081, 1519.]

r-s. 1 ♂, 1 ♀. Korinchi Peak, Sumatra, 7,300 feet. 2nd April-7th May, 1914. [Nos. 1099, 1435.]

t-u. 1 ♀, 1 ♀ imm. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 2nd June, 1914. [Nos. 1840-1.]

v. 1 ♂. Barong Bharu, Barisan Range, West Sumatra, Lat. 2° S. 4,000 feet. 6th June, 1914. [No. 1916.]

"Iris red, bill and feet black."

Fairly common from about 4,000 to 6,000 feet but scarce above and below these limits.

Though as shown above a large series of this species was secured none of the specimens have perfect tails; indeed in only two birds is even one terminal racket left. Both rackets

are short, but the form apparently agrees with the typical Javan bird, of which we have a large series of good specimens available. As already noted by Ogilvie Grant (*loc. cit. supra*), the Malayan Peninsular bird is quite distinct, differing from the Javan form (nine specimens compared), in having the outer tail feather rackets very long and narrow, tapering gradually towards the base, instead of terminating more or less abruptly. Maximum breadth about 13 mm. against over 20 mm. in the Javan series.

It may be named

BHRINGA REMIFER subsp. *ATTENUATA* nov.

Type:—Adult male, Bukit Fraser, Selangor-Pahang boundary, 4,000 feet. 11th October, 1909. F.M.S. No. 2386/09.

Series examined:—Fifty adult birds from the mountains of Perak, Selangor and Pahang.

163. *Oriolus maculatus*, Vieill.

Oriolus maculatus, Vieill.; Sharpe, Cat. Birds Brit. Mus. iii, p. 199 (1877); Vorderman, *op. cit.* p. 410, no. 391.

Oriolus chinensis, Raffles (nec. Linn.) Trans. Linn. Soc. xiii, p. 303 (1822).

Oriolus coronatus, Salvad., Ann. Mus. Civ. Gen. xiv, p. 238 (1879); *id. op. cit. ser. 2a. xii*, p. 70 (1891); Vorderman, *op. cit.* p. 411, no. 390.

Oriolus indicus, Buttkofer, Notes Leyden Mus. ix, p. 71 (1886).

a-d. 3 ♂, 1 ♀. Sungei Penoh, Korinchi Valley, Sumatra, 2,600 feet. 9th-11th March, 1914. [Nos. 4, 15, 54, 62.]

e. 1 ♂. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 19th May, 1914. [No. 1593.]

f-m. 6 ♂, 2 ♀. Sandaran Agong, Korinchi Valley, 2,450 feet. 29th May-8th June, 1914. [Nos. 1647, 1748, 1803, 1815, 1849, 1884-6.]

"Iris carmine, bill clear pinkish horn, feet slaty or greenish slate."

Confined entirely to the cleared country and orchard land on the floor of the valley where it was exceedingly common, its clear flute-like whistle constantly heard.

The sexes apparently differ but slightly in colouration, the male being more orange and having the inner webs of the inner secondaries deeper black, and the yellow on the outer webs more circumscribed and clearly defined.

Buttkofer (*loc. cit.*) has confused the present species with the continental form *O. indicus* (*O. diffusus*, Sharpe), which can be at once distinguished by the fact that practically the whole of the outer web of the inner secondaries is yellow,

while the mantle in the female is much more greenish than in *O. maculatus*.

164 *Oriolus xanthonotus* (Horsf.).

Oriolus xanthonotus Horsf., Trans. Linn. Soc. xiii, p. 153 (1821).

a. ♀. imm. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet, 28th March. [No. 484.]

"Iris red, bill maroon brown, feet grey."

165. *Oriolus cruentus* subsp. *consanguineus* (Wardl. Rams.).

Analcipus cruentus, Wardl. Rams., P. Z. S. 1880, p. 15; Vorderman, Nat Tijd. Nederl. Ind. xlix, p. 411, no. 393 (1889).

Oriolus cruentus, Buttikofer (nec. Wagl.), Notes Leyden Mus. ix, p. 72 (1887).

Analcipus consanguineus, Wardl. Rams., Ibis, 1881, p. 33, pl. i, figs. 2, 3; Salvad., Ann. Mus. Civ. Gen. (2) xii, p. 71 (1891).

Oriolus consanguineus, Sharpe, Ibis, 1887, p. 438; Ogilvie Grant, Fascic. Malay Zool. iii, p. 68 (1905); Robinson, Journ. Fed. Malay States Mus. ii, p. 211 (1909).

a-m. 6 ♂ ad., 1 ♂ imm., 6 ♀. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 15th-28th March, 1914. [Nos. 126, 147, 148, 232-3, 286, 302, 305, 323, 334-5, 463, 499.]

n-b'. 10 ♂ ad., 1 ♂ imm., 5 ♀. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. 31st March-5th May, 1914. [Nos. 520, 546, 636, 734, 797, 809, 835, 865, 875, 964, 966, 1049, 1060, 1067, 1580.]

c'. 1 ♂. Korinchi Peak, Sumatra, 7,300 feet. 7th May, 1914. [No. 1434.]

d'-f'. 3 ♂. Barong Bharu, Barisan Range, West Sumatra, Lat. 2° S. 4,000 feet. 4th-10th June, 1914. [Nos. 1902, 1918, 1968.]

"Iris hazel, bill bluish slate, tipped with black, feet bluish slate."

Very common singly or in pairs in heavy jungle, in the lower slopes, but not found in the open and scarce above 5,000 feet.

Grant (*loc. cit.*) has remarked that specimens of this species from the Malay Peninsula are larger (wing 5.4 in. or 137 mm.) than those from Sumatra (wing 5.1-5.2 in. or 129-131.5 mm.), and our large series bear out his statements: eleven fully adult birds from Sumatra range from 126-137 mm. in wing length and average 132.8, while ten from the mountains of the Malay Peninsula have a range of 133-145, and average 138.25. The bills of the mainland birds are also noticeably longer.

All the fully adult birds have the outer primary coverts entirely crimson, but there is much variation associated with age in this character. Most writers appear to regard the sexes in this group of Orioles as practically identical but in the large series before us no female has more than one or two small crimson feathers on the breast, while the primary coverts are nearly always uniform black.

There is not the slightest doubt that *O. vulneratus*, Sharpe, from the mountains of Borneo, *O. consanguineus*, (Wardl. Rams.), from the mountains of Sumatra and the form from the Malay Peninsula, which at present possesses no name, are, if not strictly identical, at anyrate exceedingly closely allied subspecies; but in the absence of series from Borneo at all comparable with those before us from Sumatra and the Malay Peninsula we prefer to leave the nomenclature as it stands and not to unite all three forms under *O. consanguineus* or to name the Peninsular form. Local distinctions, if they are ultimately proved to exist, will probably be found to lie in the dimensions rather than in colour.

The Javan form, *Oriolus cruentus*, is certainly distinct from the others, having the black parts of a velvety black, with no tinge whatever of a steely green, which is well marked in Malayan and Sumatran species. The outer primary coverts are uniform black and the scarlet of the abdomen is more restricted.

166 *Artamus leucogaster* (Valenc.).

Lanius leucorhynchus, Raffles, Trans. Linn. Soc. xiii, p. 306 (1822).

Artamus leucogaster, Salvad., Ann. Mus. Civ. Gen. xiv, p. 204 (1879); Snelleman in Veth's Midden-Sumatra Exped. Vogels, iv, p. 42 (1884); Buttikofer, Notes Leyden Mus. ix, p. 46 (1887); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 398, no. 173 (1889); Sharpe, Cat. Birds Brit. Mus. xiii, p. 3 (1890); Salvad., Ann. Mus. Civ. Gen. (2) xii, p. 56 (1891).

Artamus leucorhynchus, Hartert, Nov. Zool. ix, p. 207 (1902).

a-c. 2 ♂, 1 ♀. Sungei Penoh, Korinchi Valley, Sumatra, 2,700 feet. 9th-11th March, 1914. [Nos. 1, 2, 63.]

d. 1 ♀. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 23rd March, 1914. [No. 356.]

e-w. 9 ♂, 11 ♀. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 24th May-6th June, 1914. [Nos. 1621-4, 1644, 1669-70, 1691, 1710-11, 1717-9, 1799, 1800, 1851, 1862-4, 1875.]

"Iris hazel or dark hazel, bill pale blue slate, extreme tip black, feet mealy slate."

This Wood Swallow was extremely common in the open country of the Korinchi Valley and also in the low-lying land along the coast, sitting like its congeners in Australia in rows on the telegraph wires and wheeling through the air in long circling glides with the wings held stiff like a kite or hawk.

From the records it appears to be very much rarer on the East Coast of Sumatra, while it is altogether absent from the Malay Peninsula.

167. *Aplonis pan. yensis* subsp. *strigatus* (Horsf.).

Turdus strigatus, Horsf., Trans. Linn. Soc. xiii, p. 148 (1821).

Turdus chalybeus, Horsf. loc. cit. supra.

Lanius insidiator, Raffles, Trans. Linn. Soc. xiii, p. 337 (1822).

Calornis chalybea (Horsf.); Salvad., Ann. Mus. Civ. Gen. xiv, p. 238 (1879); Nicholson, Ibis, 1882, p. 62; Buttkofer, Notes Leyden Mus. ix, p. 71 (1887); Sharpe, Cat. Birds Brit. Mus. xiii, p. 143 (1890); Salvad., Ann. Mus. Civ. Gen. (2) xii, p. 71 (1891); id. Bull. Mus. Zool. Turin, xi, p. 11 (1896); Vorderman, Nat. Tijds. Nederl. Ind. xlix, p. 411, no. 387 (1889); Hartert, Nov. Zool. ix, p. 214 (1902).

Aplonis cantor (Temm.); Snelleman in Veth's Midden-Sumatra Exped. Vogels, iv, p. 43 (1884).

Lamprocorax chalybea (Horsf.); Stone, Proc. Acad. Nat. Sci. Philad. liv, p. 690 (1902).

Aplonis panayensis strigatus, Stresemann, Nov. Zool. xx, p. 376 (1913); Robinson, Journ. Fed. Malay States Mus. vii, p. 185 (1817).

a-e. 2 ♂ ad., 2 ♀ ad., 1 ♀ imm. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 18th March-19th May, 1914. [Nos. 217, 400, 418, 488, 1,590.]

f, g. 1 ♂, 1 ♀. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 3rd-5th June, 1914. [Nos. 1852, 1872.]

h. 1 ♂ imm. Pasir Ganting, West Sumatran Coast, Lat. 2° S. 19th June, 1914. [No. 2035.]

"Iris red, bill and feet black (adult)."

"Iris hazel, bill black, yellowish at gape, feet greyish black (immature)."

Very common in large flocks in the Korinchi valley, nesting and roosting in the Coconut and Areca palms.

These specimens are normal in every way and agree closely with others from various parts of the mainland of the Malay Peninsula. They show no tendency to an enlargement

of the beak, such as is in evidence in many of the races inhabiting small islands, a character on which several local races have been founded, the most distinct being *C. altirostris* from Nias (Salvad., Ann. Mus. Civ. Gen. (2) iv, p. 553 (1887)).

168. *Ploceus passerinus* subsp. *infortunatus*, Hartert.

Ploceus atrigula, Hodgs.; Sharpe, Cat. Birds Brit. Mus. xiii, p. 491 (1890); Salvad., Ann. Mus. Civ. Gen. (2) xii, p. 70 (1891); id. Bull. Mus. Zool. Turin, xi, p. 10 (1896).

Ploceus manyar, Vorderman, Nat. Tijds. Nederl. Ind. xlix, p. 410, no. 376 (1889).

Ploceus passerinus infortunatus, Hartert, Nov. Zool. ix, p. 578 (1902); Parrot, Abh. Konigl. Akad. Bayer. II, xxiv, Bd. I, p. 254 (1907).

Ploceus megarhynchus, Hume; Stone, Proc. Acad. Nat. Sci. Philad. liv, p. 689 (1903).

a, b. 2 ♂. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 24th March, 1914. [Nos. 398, 399.]

c.-g. 3 ♂, 2 ♀. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 26th May-7th June, 1914. [Nos. 1671, 1673, 1747, 1881-2.]

Adult male: "Iris chestnut, bill yellowish horn or black, tarsi and claws pale pinkish horn."

Female: "Iris warm brown, feet dirty flesh, bill yellowish horn."

Throughout the valley this Weaver Bird was fairly common, its large flask-shaped nest being often seen hanging in colonies at the end of tree branches or occasionally attached to the leaves of coconut palms.

All the males of the present series are adult and have the yellow head and black throat well developed. Four out of the five have black bills and are all in worn plumage, with the edges of the feathers of the mantle whitish and the breast and belly dirty whitish buff. The fifth is in freshly moulted plumage, has the bill pinkish horn, the edges of the feathers of the mantle yellowish brown and the rump and under surface cinnamon buff. The wing ranges from 68-74 mm., with an average of 69.8, which agrees with the dimensions given by Hartert (*loc. cit.*), for the types from the Malay Peninsula.

169. *Munia punctulata* subsp. *nisoria* (Temm.).

Munia punctularia (Linn.); Salvad., Ann. Mus. Civ. Gen. xiv, p. 237 (1879); Nicholson, Ibis, 1883, p. 254; Buttikofer. Notes Leyden Mus. ix, p. 71 (1887); Vorderman, Nat. Tijds. Nederl. Ind. xlix, p. 410, no. 383 (1889).

Munia nisoria (Temm.), Sharpe, Cat. Birds Brit. Mus. xiii, p. 352 (1890); Salvad., Ann. Mus. Civ. Gen. (2) xii, p. 70 (1891).

a-h. 4 ♂, 4 ♀. Siolak Daras, Korinchi Valley,
Sumatra, 3,000 feet. 15th-17th March,
1914. [Nos. 153-4, 162-3, 183, 202-4.]

"Iris brown, bill and feet ."

Common in flocks of as many as fifty individuals, among the rice fields.

170. *Munia acuticauda*, (Hodgs.).

Munia acuticauda, Salvad., Ann. Mus. Civ. Gen. xii, p. 237 (1879).

Uroloncha acuticauda, Sharpe, Cat. Birds. Brit. Mus. xiii, p. 356 (1890).

Munia acuticauda acuticauda, Parrot, Abh. Konigl. Bayer. Akad. der Wissensch. II, Kl. XXIV, Bd. I, p. 254 (1907).

a. 1 ♀. Sungei Penoh, Korinchi Valley, Sumatra,
2,600 feet. 12th March, 1915. [No. 85.]

"Iris chestnut, bill lead grey, feet dark lead grey."

Not nearly so common as the preceding species and flying in much smaller flocks.

171. *Munia maja* (Linn.).

Munia maja (Linn.), Salvad., Ann. Mus. Civ. Gen. xiv, p. 237 (1879); Tweedd., Ibis, 1877, p. 318; Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 410, no. 380 (1889); Sharpe, Cat. Birds Brit. Mus. xii, p. 332 (1890); Salvad. Ann. Mus. Civ. Gen. (2) xii, p. 70 (1891).

Munia maja maja, Parrot, Abh. Konigl. Bayer. Akad. der Wissensch. II, Kl. XXIV, Bd. I, p. 254 (1907).

a, b. 2 ♀. Siolak Daras, Korinchi Valley, Sumatra,
3,000 feet. 26th March, 1914. [Nos. 447,
448.]

"Iris dark hazel, bill pale French grey, feet slate."

About as common as *M. m. nisoria* and in similar situations.

172. *Dendronanthus indicus* (Gm.).

Limoniidromus indicus (Gm.); Wardl. Rams., P. Z. S. 1980, p. 15; Sharpe, Cat. Birds Brit. Mus. x, p. 532 (1885); Buttikofer, Notes Leyden Mus. ix, p. 70 (1887); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 410, no. 370 (1889); Salvad., Ann. Mus. Civ. Gen. (11) xii, p. 69 (18).

Dendronanthus indicus, Hartert, Vog. Palaarkt. Faun. 1, p. 311 (1905).

a-c. 2 ♂, 1 ♀. Siolak Daras, Korinchi Valley,
Sumatra, 3,000 feet. 15th-24th March,
1914. [Nos. 121, 122, 362.]

"Iris hazel, upper mandible horn, lower pinkish, tarsi pinkish white, feet paler."

Apparently occurring in Sumatra from September to March, as it does in the Malay Peninsula, where it is almost certainly migratory.

173. *Anthus richardi* subsp. *malayensis*, Eyton.

Anthus malayensis, Eyton, P. Z. S. 1839, p. 104.

Anthus rufulus, Vieill.; Sharpe, Cat. Birds Brit. Mus. x, p. 574 (1885); Buttkofer, Notes Leyden Mus. ix, p. 70 (1887); Salvad., Ann. Mus. Civ. Gen. (2) xii, p. 69 (1891).

a. 1 ♀. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 26th March, 1914. [No. 451.]

"Iris hazel, bill horn, above pinkish, beneath yellowish at gape, and black at tip, feet fleshy."

Fairly common on the roads and rice stubble in the open Korinchi Valley, but not nearly so abundant as in similar situations in the Malay Peninsula.

174. *Aethopyga siparaja* (Raffles).

Certhia siparaja, Raffles, Trans. Linn. Soc. xiii, p. 299 (1822).

Aethopyga siparaja (Raffles); Salvad., Ann. Mus. Civ. Gen. xiv, p. 212 (1879); Nicholson, Ibis, 1883, p. 252; Buttkofer, Notes Leyden Mus. ix, p. 56 (1887); Gadow, Cat. Birds Brit. Mus. ix, p. 21 (1884) (part.); Vorderman, Nat. Tijds. Nederl. Ind. xlix, p. 400, no. 219 (1889); Salvad., Ann. Mus. Civ. Gen. (2) xii, p. 58 (1891); Robinson & Kloss, Ibis, 1911, p. 74.

Aethopyga siparaja siparaja, Parrot, Abh. Konigl. Akad. Bayer. II, xxiv, Bd. 1, p. 234 (1907).

a, b. 2 ♂. Sungei Penoh, Korinchi Valley, Sumatra, 2,700 feet. 11th-12th March, 1914. [Nos. 55, 73.]

c, d. 2 ♂. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 24th-31st May, 1914. [Nos. 1646, 1806.]

e, f. 2 ♂. Pasir Ganting, West Sumatran Coast, Lat. 2° S. 18th June, 1914. [Nos. 2010-11.]

"Iris dark or hazel; upper mandible black, lower brownish, feet brownish."

This Sun-bird was fairly common in open country in the Korinchi Valley and on the coast, feeding on the inflorescence of Coconut Palms and on the blossoms of Hibiscus and other conspicuous flowering shrubs. It was never found in old jungle.

These specimens may be regarded practically as typical, Raffle's original types having been obtained at Bencoolen, only slightly to the southward.

Comparison of them with a series from Borneo and Penang discloses no practical differences, but some from further north of the Malay Peninsula (Langkawi and Terutau Ids., Trang and Bandon), are to be referred to the Tenasserim race—described by Hume as *Ae. cara*, while others from Trang, and Perlis and also the Butang Archipelago, to the westward of Langkawi and Terutau, are quite intermediate.

175 *Aethopyga temminckii* (Müll. & Schleg.).

Nectarinia temminckii, Müll. & Schleg. Verh. Zool. p. 172, tab. 8, fig. 2 (1844).

Aethopyga temminckii (Müll. & Schleg.); Salvad., Ann. Mus. Civ. Gen. xiv, p. 213 (1879); Gadow, Cat. Birds Brit. Mus. ix, p. 16 (1884); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 400, no. 220 (1889); Sharpe, Ibis, 1889, p. 421; Salvad., Ann. Mus. Civ. Gen. (2) xii, p. 58 (1891); Robinson, Journ. Fed. Malay States Mus. ii, p. 213 (1909); Robinson & Kloss, Ibis, 1911, p. 75.

a-e. 4♂, 1♀. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 19th-26th March, 1914. [Nos. 257, 274, 409, 443-4.]

f-x. 7♂ ad., 3♂ imm., 9♀. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. 2nd April-13th May, 1914. [Nos. 568, 614-5, 670, 714, 788, 825, 830, 832-3, 884, 915, 950, 955, 1015, 1043-4, 1057, 1576.]

y-z. 2♂ ad. Barong Bharu, Barisan Range, West Sumatra, Lat. 2° S. 4,000 feet. 9th-11th June, 1914. [Nos. 1906, 1987.]

"Iris hazel, bill dark horn, pinkish brown beneath, feet brownish."

This species takes the place of *Ae. siparaja* in old jungle above about 3,000 feet, extending upwards to about 5,000 feet. It was very common in glades in the forest, where trees had fallen down, allowing light and air to penetrate and where there was consequently a profusion of flowering shrubs and creepers. The full plumaged males and duller coloured females and immature birds seemed to be about equal in numbers, but the latter were somewhat difficult to obtain.

176. *Cyrtostomus ornata* (Less).

Nectarinia pectoralis, Horsf., Trans. Linn. Soc. xiii, p. 167 (1821); (nom. praeocc).

Cinnerys ornatus, Less., Dict. Sc. Nat. i, p. 15 (1827).

Cyrtostomus pectoralis (Horsf.); Salvad., Ann. Mus. Civ. Gen. xiv, p. 212 (1879); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 400, no. 216 (1889); Salvad., Ann. Mus. Civ. Gen. (2) xii, p. 58 (1891).

Cinnyris ornata ornata, Stresemann, Nov. Zool. xx, p. 368 (1913), (Bali).

a. 1 ♂. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 25th May, 1914. [No. 1653.]

"Iris, bill and feet black."

Not uncommon at flowering shrubs in open ground in the Korinchi Valley.

177. *Anthothreptes malaccensis* (Scop.).

Anthothreptes malaccensis (Scop.); Salvad., Ann. Mus. Civ. Gen. xiv, p. 213 (1879); Gadow, Cat. Birds Brit. Mus. ix, p. 122 (1884); Salvad., Ann. Mus. Civ. Gen. (2) xii, p. 58 (1891); Hartert, Nov. Zool. ix, p. 208 (1902).

Anthreptes malaccensis malaccensis, Parrot, Abh. Konigl. Akad. Bayer. II, xxiv, Bd. 1, p. 233 (1907).

a, b. 1 ♂, 1 ♀. Sungei Penoh, Korinchi Valley, Sumatra, 2,700 feet. 11th March, 1914. [Nos. 48, 49.]

c-f. 3 ♂, 1 ♀. Pasir Ganting, West Sumatran Coast, Lat. 2° S. 18th-22nd June, 1914. [Nos. 2000, 2065, 2076, 2085.]

Male:—"Iris chestnut, bill black, feet yellowish green. *Female*: bill black above, yellowish horn beneath."

Not at all common in the Korinchi Valley, though a pair or so were occasionally seen feeding on the flowers of the coconut palms, with which this sunbird is almost exclusively associated. Very common indeed on the coast.

The female from Korinchi is grayer and less green than that from Pasir Ganting, and the male has the metallic colouring of the upper parts less violet and more greenish, but the differences can be matched in a large series from the Malay Peninsula and are evidently only individual.

***Anthothreptes simplex* (S. Müll.)**

Arachnophila simplex (S. Müll.); Salvad., Ann. Mus. Civ. Gen. xiv, p. 212 (1879); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 400, no. 218 (1889).

Anthothreptes simplex (S. Müll.); Gadow, Cat. Birds Brit. Mus. ix, p. 114 (1884); Buttikofer, Notes Leyden Mus. xxi, p. 214 (1900); Finsch, op. cit. xxvi, p. 78 (1905); Robinson and Kloss, Ibis, 1911, p. 75.

a. 1 ♂. Pasir Gantang, West Sumatran Coast, Lat. 2° S. 18th June, 1914. [No. 1999.]

"Iris red, bill black, feet greenish yellow."

The only specimen of this somewhat rare Sun-bird obtained is unfortunately heavily in moult and is badly pin-feathered. It differs at a glance from a considerable series from various parts of the Malay Peninsula in being much less

yellowish green above and much clearer grey below, only the median line of the abdomen being washed with yellow. It agrees fairly well with Müller's figure.

Should additional material from Sumatra maintain these distinctions, the form from the Malay Peninsula will have to be known as *Anthothreptes simplex zanthochlora* (Hume, Stray Feathers, iii, p. 320 note (1875). Bornean specimens require further examination.

Chalcoparia singalensis (Gm.)

Chalcoparia phoenicotis (Temm.); Salvad., Ann. Mus. Civ. Gen. xiv, p. 214 (1879).

Chalcoparia singalensis, Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 400, no. 224 (1889).

Anthothreptes phoenicotis, Gadow, Cat. Birds Brit. Mus. ix, p. 121 (1884).

a. 1 ♂. Pasir Ganting, West Sumatran Coast, Lat.
2° S. 20th June, 1914. [No. 2046.]

"Iris red, bill black, feet yellowish green."

We can detect no differences between this bird and others from the south of the Peninsula, the type locality having been fixed as Malacca by Oberholser (Smithsonian Misc. Coll. lx, No. 7, p. 21 (1912).

As both Davison and Oates have noted, this Ruby-Cheek is not a Sunbird in its habits but is much more akin to certain of the smaller Timaliine birds such as *Mixornis* and *Cyanoderma*.

178. Arachnothera longirostra (Lath.).

Arachnothera longirostra (Lath.); Salvad., Ann. Mus. Civ. Gen. xiv, p. 214 (1879); Gadow, Cat. Birds Brit. Mus. ix, p. 103 (1884); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 400, no. 225 (1889); Hartert, Nov. Zool. ix, p. 210 (1902); Van Oort, Notes Leyden Mus. xxxii, pp. 194 et seq. (1910).

Arachnothera longirostra longirostra, Parrot, Abh. Konigl. Akad. Bayer. II, xxiv, Bd. 1, p. 236 (1907).

Arachnothera longirostra melanchima, Oberholser, Smithsonian Misc. Coll. Vol. 60, No. 7, p. 19 (1912).

a-c. 3 ♀. Sungei Kumbang, Korinchi, Sumatra,
4,700 feet. 10th April-13th May, 1914.
[Nos. 777, 954, 1574.]

d. 1 ♂. Sandaran Agong, Korinchi Valley, Sumatra,
2,450 feet. 1st June, 1914. [No. 1816.]

"Iris hazel, upper mandible black, lower whitish horn at base, black at tip, feet slate."

Oberholser's diagnosis of his *A. l. melanchima* from the Upper Siak River, Eastern Sumatra, is "Much like *A. l. longirostra* from the Malay Peninsula, but with the olive green of upper parts darker and less yellowish or bronzy."

Expedition to Korinchi:

Comparison of the above four specimens with a large series of the typical form from the Malay Peninsula enables one to say with some degree of certainty that when freshly collected specimens are compared no differences whatever can be detected in the tint of the upper parts. Older skins tend to become slightly more yellowish and bronzy, even when protected from the light. Oberholser's specimens from Sumatra were probably more recent in date than his comparative material from the Malay Peninsula.

179 *Arachnothera chrysogenys*, Temm.

Arachnothera chrysogenys, Temm.; Salvad., Ann. Mus. Civ. Gen. xiv, p. 214 (1879); Gadow, Cat. Birds Brit. Mus. ix, p. 108 (1884); Buttikofer, Notes Leyden Mus. ix, p. 108 (1884); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 400, no. 231 (1889).

Arachnothera chrysogenys copha, Oberholser, Smithsonian Misc. Coll. vol. 60, no. 7, p. 20 (1912).

a, b. 2 ♂. Sungei Kumbang, Korinch, Sumatra,
4,700 feet. 9th April, 1914. [Nos. 763-4.]

"Iris chestnut or chocolate, bill black, the lower mandible with the base pinkish and the tomia broadly yellow, feet brownish fleshy."

None of the Spider-hunters were at all common in Korinchi, probably because we were rather higher than the zone in which Scitamineous plants amongst which these birds largely feed, reach their maximum abundance.

These specimens probably belong to the race from Tapanuli bay, N. W. Sumatra, described by Mr. Oberholser as *Arachnothera chrysogenys copha* in his paper "Descriptions of one hundred and four new species and subspecies of Birds from the Barussan Islands and Sumatra," cited above. His diagnosis "Similar to *Arachnothera chrysogenys chrysogenys* from South Eastern Sumatra but larger, upper and lower parts darker and duller" is, however, so meagre that in the absence of specimens from S. E. Sumatra it is impossible to be certain. The two skins mentioned above have wings of 83 and 85 mm., while a series from various parts of the Malay Peninsula which would probably be identical with those from S. E. Sumatra range from 82-89 mm.

180. *Arachnothera flavigaster* (Eyton).

Anthreptes flavigaster, Eyton, P. Z. S. 1839, p. 105.

Arachnothera flaviventris, Gadow, Cat. Birds Brit. Mus. ix, p. 109 (1884).

Arachnothera flavigaster (Eyton); Buttikofer, Notes Leyden Mus. ix, p. 58 (1887); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 400, no. 227 (1889); Robinson & Kloss, Ibis, 1911, p. 78; Parrot, Abh. Konigl. Akad. Bayer. II, XXIV, Bd. I, p. 235 (1907).

Part II: Vertebrata.

- a, b.* 2 ♀. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 21st March-19th May, 1914. [Nos. 289, 1603.]
- c, d.* 1 ♂, 1 ♀. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. 7th-14th April, 1914. [Nos. 709, 898.]
- e, f.* 1 ♂, 1 ♀. Sandaran Agong, Korinchi, Valley, Sumatra, 2,450 feet. 25th-26th May, 1914. [Nos. 1659, 1672.]

"Iris hazel or chocolate; bill, upper mandible corneous, lower pinkish horn; feet wax yellow, ranging to orange."

Fairly widely distributed up to about 5,000 feet, but nowhere at all common.

Like other members of the subgenus *Arachnorphis*, the males are very considerably larger than the females, having the wing 108-111 against 94-104 in the latter sex.

181. *Arachnothera robusta* subsp. *robusta*, Müll. and Schleg.

Arachnothera robusta, Müll. and Schleg., Verh. Nat. Gesch. p. 68, pl. 11, fig. 1 (1846); Gadow, Cat. Birds Brit. Mus. ix, p. 101 (1884); Buttikofer, Notes Leyden Mus. ix, p. 57 (1887); Finsch, op. cit. xxii, p. 223 (1901).

Arachnothera armata, Müll. and Schleg., op. cit., p. 68, pl. 11, fig. 2 (1846); Finsch, tom. cit. p. 223 (1901).

- a.* 1 ♂. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 27th May, 1914. [No. 1698.]

- b.* 1 ♀. Sungei Kumbang, Korinchi, Sumatra, 4,700 feet. April 20th, 1914. [No. 1052].

"Iris chocolate or hazel, bill black, paler horn at base of lower mandible, feet greenish black."

There is some confusion with relation to the forms of this subsection *Arachnorphis*, inhabiting the Malay Peninsula and the Indo-Malayan Islands.

In 1846, Müller and Schlegel described two species *A. robusta* and *A. armata*, the types of both species coming from Indrapura on the West Sumatran coast, about fifty miles in a straight line from the localities where the above listed specimens were secured.

A. armata differed from *A. robusta* in its smaller size, especially in the bill and in the darker throat and chest, which is much greyer and in the less yellow abdomen. The figures given do not, however, bear out these differences.

Finsch (*loc. cit.*) and Buttikofer, also consider that the species have a separate existence, while Hartert (Nov. Zool. viii, p. 52 (1901)), working on a series of recently collected birds from Java, shows that the birds from this island are

consistently different from those from the other localities, having a shorter bill (43 mm.) against 55 mm. in the Sumatran and Bornean birds.

He, however, calls the Javan bird *A. robusta uropygialis*, G. R. Gr. Gen. B. i, Pl. 33 (1847), which is antedated by Müller and Schlegel's *A. armata*, and it will perhaps be safer to accept this and regard all the birds from the Malay Peninsula, Sumatra and Borneo as typical *A. robusta*, seeing that Müller and Schlegel mention a bird from Pangerango in Java in their account of *A. armata*: for what has probably happened is that the description of *armata* has been taken from this specimen, while the figure has been based on one of the birds from Indrapura.

Finsch, however, also records *A. robusta* from Java on the strength of a specimen collected by Vorderman, but the bill was evidently imperfect, as no dimensions are given, so that the identification is very doubtful.

Females are undoubtedly smaller than males, the dimensions of the above two specimens taken in the flesh being

	Total length.	Wing.	Tail.	Bill from gape.	Tarsus.
	mm.	mm.	mm.	mm.	mm.
Male	215	86	63	53	19
Female	200	79	58	51	18

Six adult males from the Malay Peninsula with the orange pectoral tufts fully developed, vary in wing from 86-90 and in bill from 55-60, while the wing of a female is 79 and the bill 51 mm. We can detect no material differences in colouration.

182. *Dicaeum sumatranum*, Cab.

Dicaeum sumatranum, Cab., Journ. fur. Ornith. 1878, p. 101; Sharpe, Cat. Birds Brit. Mus. x, p. 18 (1885); Hartert. Nov. Zool. ix, p. 210 (1902).

a-b. 1 ♂, 1 ♀. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 24th-31st May, 1914.
[Nos. 1640, 1807.]

"Male; iris dark, bill and feet black."

"Female; iris dark, bill slate, culmen black, feet black."

Shot among low trees in secondary growth, but not common.

Flower-peckers seem rare over the greater part of Sumatra or perhaps are rather jibbed at by many collectors. Beccari seems to have got only two specimens, while none at all were collected by Modigliani, Klaesi or Forbes. They are certainly not so common as in the forests of the Malay Peninsula.

183. *Dicaeum beccarii*, (Plate VII., fig I.)

Dicaeum beccarii, Robinson and Kloss, Journ. Straits Branch Roy. Asiat. Soc. No. 73, p. 278 (1916).

Dicaeum vanheysti, Robinson and Kloss, Journ. Fed. Malay States Mus. vii, p. 239 (1918).

- a. 1 ♂ ad. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 27th March, 1914. [No. 480.]
- b. 1 ♂ ad. Korinchi Peak, Sumatra, 7,300 feet. 26th April, 1914. [No. 1171] *Type*.
- c. 1 ♂ ad. Korinchi Peak, Sumatra, 7,300 feet. 8th May, 1914. [No. 1485.]

Belonging to the group including *D. ignipectus*, from the Himalayan countries and the mountains of the Malay Peninsula, *D. sanguinolentum* from Java and *D. pygmaeum* of the Philippine Islands. From the first two it differs markedly in lacking all red on the chest, in the absence of the glossy green black patches on the sides of the breast and in the reduction of the black median abdominal streak.

From the latter it may be distinguished by having the lower back and rump glossy steel green, as the rest of the upper surface, not olive yellow.

Adult male:—Whole upper surface steel green with violet reflections. Wing and tail black, the outer webs of the primaries glossy steel green, the tail feathers washed with metallic violet. Sides of the head and throat, ear coverts and a small patch on the sides of the breast, dark blackish grey; flanks and tibial feathers greenish olive. A median black patch on the abdomen; rest of the under surface buffy, pale on the throat and under tail coverts; quill lining and under wing coverts silky white; axillaries white, faintly tinged with buff.

"Iris dark, bill black, feet brownish black."

Total length, 92; wing, 50; tail, 34; bill from gape, 10; tarsus, 14 mm.

This little Flower-pecker is apparently rare, possibly because it lives in very high trees and is therefore hard to see and obtain, and though after the first one was secured it was hunted for assiduously, only the above series was collected.

At first sight it might be considered that this species is merely an immature phase of *D. ignipectus*, which has not been recorded from Sumatra, or of *D. sanguinolentum* which has been attributed to the island on insufficient evidence, but we do not think that this is the case. The feet and bill, which is not orange at the gape, show that they are adult, which is additionally borne out by the highly glossy upper plumage. Of the sex there is no possible doubt.

The birds named *Dicaeum vanheysti* are immature examples of this species.

184. *Zosterops montana*, Bp.

Zosterops montana, Müll; Bp., Consp. i, p. 398 (1850); Finsch, Tierr. Aves., Lief. xv, p. 11 (1901); Finsch., Notes Leyden Mus. xxii, p. 222 (1900).

Zosterops chlorates, Hartl.; Nicholson, Ibis, p. 253; Vorderman, Nat. Tijds. Nederl. Ind. xlix, p. 401, no. 234 (1889).

a-i. 3 ♂, 6 ♀. Korinchi Peak, Sumatra, 7,300 feet.
24th April-7th May, 1914. [Nos. 1108, 1134,
1152, 1203, 1208, 1266, 1284, 1329, 1476.]

j-p'. 18 ♂, 15 ♀. Korinchi Peak, 10,000-10,500 feet.
27th April-7th May, 1914. [Nos. 1204,
1260-1, 1341-5, 1366, 1384-8, 1417-21, 1426,
1460, 1462-6, 1468-74.]

"Iris hazel, bill slate, culmen and tip black, feet pale slate."

This species was not common at our camp at 7,300 feet, below which level it did not occur, but as the mountain was ascended became very abundant until the zone of dwarf shrubs was reached, where it far outnumbered individuals all other species taken together. It flew in small flocks of four or five to over a dozen and fed on the flowers of the Rhododendrons and Vaccinium which formed the major part of the vegetation. It utters a low but melodious little song on three notes. Though most abundant on the upper verge of the forest at about 10,000 feet it also ascended towards the extreme limit of vegetation at over 11,000 feet.

The large series of over forty specimens is very constant in characters. Young birds are duller in colour and have the yellow of the throat more greenish and that of the forehead less differentiated from the rest of the head. The brownish ashy of the flanks is not so marked.

There seems considerable doubt as to what the proper name of this species is, so we have followed Finsch in his determination.

It is practically certain that the records of the occurrence of *Zosterops chlorates*, *Zosterops fallax*, *Oreozosterops javanica* and *Oreozosterops montana* given for this island by Vorderman (*loc. cit. supra*), are all in reality referable to this species which is in all probability to be found on most of the Volcanoes in the island rising above 8,000 or 9,000 feet.

All recent descriptions of *Zosterops chlorates* are founded on specimens obtained by Forbes on the Dempo (10,000 feet) and agree in stating that the abdomen is golden yellow while the flanks have a ruddy tinge: the figure given by Robinson (Bull. Liverp. Mus. II, p. 11, fig. 1 (1899)) agrees in these particulars. According to Finsch (*loc. cit.*) the types of *Z. montana* and *Z. chlorates* in the Leyden Museum, collected by Müller, are identical and, though no precise locality is available, must have been collected somewhere in the Padang Highlands, probably on Singgalang or Merapi.

The large series from Korinchi differs from descriptions and figures of Forbes' birds, in having the middle of the belly distinctly white with only a light primrose suffusion and the flanks markedly buffy brown.

Under the circumstances we are inclined to think that the balance of probability is in favour of the hypothesis that the Padang and Korinchi birds are identical, while the Dempo form is unnamed, rather than that the Padang and Dempo birds are both *Z. montana*, but are separated in Korinchi by another form.

The Dempo bird, therefore, lacks a name but may be cited as

***Zosterops difficilis* sp. nov.,**

the type being the specimen in the Liverpool Museum figured by Robinson, while an adequate description is given by Sharpe (Cat. Birds Brit. Mus. ix, p. 191 (1884).

185. *Zosterops atricapilla*, Salvad.

Zosterops atricapilla, Salvad., Ann. Mus. Civ. Gen. xiv, p. 215 (1879); Sharpe, Cat. Birds Brit. Mus. ix, p. 176 (1884); Vorderman, Nat. Tijd. Nederl. Ind. xlix, p. 401, no. 235 (1889); Finsch, Terr. Aves Lief. xv, p. 35 (1901).

a-b. 1 ♂, 1 ♀. Korinchi Peak, Sumatra, 7,300 feet.
12th-16th May, 1914. [Nos. 1510, 1527.]

c-e. 1 ♂, 2 ♀. Barong Bharu, Barisan Range, West Sumatra, Lat. 2° S. 4,000 feet. 5th-11th June, 1914. [Nos. 1903, 1934, 1959.]

"Iris hazel, or light brown, upper mandible black, lower slate, the tip black, feet slate."

In the absence of direct comparison of specimens from Kina balu it is impossible to be certain whether *Zosterops clara*, Sharpe, (Ibis 1888, p. 479; id. op. cit. 1889, p. 427; id. op. cit. 1890, Pl. VII, fig. 2), which is regarded as identical by Finsch, is distinct from this species.

Our five specimens agree exactly with Salvadori's description of the three original specimens obtained on Singgalang by Beccari, but when compared with Sharpe's description and figure quoted above, present the following differences. The grey of the belly and flanks is slightly darker, the black of the forehead extends very considerably beyond the eyes and the eye is completely surrounded by a black ring exterior to the silky white one.

The species are certainly very closely allied, but in view of the circumscribed areas inhabited by so many species of the genus it will be, we think, advisable to regard *Z. clara* as at anyrate a distinct subspecies.

For a long time we were disappointed in not being able to discover this very distinct species, though it was very diligently searched for. It was at last obtained on a lofty tree in very dense jungle, whereas the other species of *Zosterops* are found often on low shrubs and bushes in much more open situations.

Its range in altitude must be circumscribed at the upper limit by the extraordinary abundance of *Z. montana* and at lower levels by *Z. buxtoni*, which, however, is not such a dominant species.

186. *Zosterops buxtoni*, Nicholson.

Zosterops lateralis (nec. Latham), Hartl., Journ. fur. Orn. 1865, p. 15 (1865); Tweed., Ibis, 1877, p. 303.

Zosterops aureiventer (part.), Sharpe, Cat. Birds Brit. Mus. ix, p. 163 (1884); Nicholson, Ibis, 1880, p. 152.

Zosterops buxtoni, Nicholson, Ibis, 1879, p. 167.

a-b. 1 ♂, 1 ♀. Sungei Penoh, Korinchi Valley, Sumatra, 2,700 feet. 9th-10th March, 1914. [Nos. 11, 31.]

c-e. 3 ♂. Siolak Daras, Korinchi Valley, Sumatra, 3,000 feet. 15th March-10th May, 1914. [Nos. 145, 408, 1605.]

f. 1 ♂. Sandaran Agong, Korinchi Valley, Sumatra, 2,450 feet. 24th May, 1914. [No. 1619.]

"Iris hazel, upper mandible black, lower slate, tipped with black, feet pale grey."

In small flocks among trees on the edge of open country but not in jungle.

Considerable confusion attaches to the group of White-eyes from the Indo-Malayan region, which have as their common character a well marked median abdominal stripe of bright yellow.

Of these the following have been described:—

Zosterops aureiventer, Hume, Stray Feathers vi, p. 519, (1878). Type locality, Tavoy, Tenasserim.

Zosterops mesoxantha, Salvadori, Ann. Mus. Civ. Gen. (2) vii, p. 396 (1889). Type locality, Karin Hills, Burma.

Zosterops tahanensis, Ogilvie Grant, Bull. Brit. Orn. Club, xix, p. 9 (1906). Type locality, Gunong Tahan, Malay Peninsula.

Zosterops ventralis, Richmond, Proc. U.S. Nat. Mus. xxv, p. 288 (1902). Type locality, Car Nicobar. Id.

Zosterops salvadorii, Meyer and Wigglesworth, Journ. fur. Orn. 1894, p. 115. Type locality, Engano Id., S. W. Sumatra.

Zosterops buxtoni, Nicholson, Ibis, 1879, p. 167. Type locality, W. Java.

Of these the true *T. aureiventer* can be at once separated from all the others by the extremely pale flanks and belly, which are pale ashy buff, not clear grey; by the bright pale yellow of the upper surface and throat and by the very broad white ocular ring.

From the material before us it is probably almost exclusively a coastal form, ranging from Tenasserim along the coast of the Malay Peninsula to Banka and possibly Java and the low country of eastern Sumatra.

Zosterops mesozantha and *Z. tahanensis* are probably identical and differ at a glance from typical *Z. aureiventer* by the dark green upper surface and by the clear French grey colour of the sides of the belly and flanks. The size, too, is somewhat larger than in *Z. aureiventer*.

This race is probably a montane form and we have considerable numbers of it from the mountains of Siamese Malaya, south to the mountains of southern Selangor.

Z. ventralis, which we have not seen, has been compared with authentic *Z. tahanensis* by Mr. Richmond, who states (*in lit.*) "*Z. ventralis* and *Z. tahanensis* are by no means the same. The type of the former compared with the specimen of *Z. tahanensis* submitted, differs in the following particulars: it has a slightly browner shade of green on the upper parts, particularly on the head, and the upper tail coverts are not distinctly yellower; the yellow throat is less clear, the grey sides are slightly browner, the lower abdomen and under tail coverts are much less yellow and the anterior part of the thighs is dusky greyish, not yellow. The yellow of the throat merges gradually with the colour of sides of head and sides of neck, without the fairly distinct demarcation between the two colours shown in the specimen of *Z. tahanensis* sent. The white eye-ring is much less conspicuous in *Z. ventralis*, which has also a very noticeably heavier and longer bill. Other dimensions are nearly the same in the two specimens."

The Engano bird *Z. salvadorii* (*Z. incerta*, Salvad.), differs from *Z. aureiventer* in larger size, though with a lighter bill and in having the yellow median band on the abdomen only lightly marked.

Z. buxtoni from Java and Sumatra is certainly distinct in its bright yellow upper surface, and in its short bill and small size it agrees with the true *Z. aureiventer*, while it resembles *Z. tahanensis* in its grey flanks, but apart from dimensions can be at once separated from that race by the yellow upper tail coverts and by the yellow forehead and loreal line.

The dimensions of five specimens taken in the flesh are—Total length, 96-105; wing, 48-50; bill, from gape, 10.5-12.5; tail, 37-39; tarsus, 14-16 mm.

TABLE SHOWING DISTRIBUTION AND ALTITUDE OF BIRDS
COLLECTED ACCORDING TO STATIONS.

Species.	Pasir Ganting Sea level.	Sandaran Agung 2,450 feet.	Sungei Penoh 2,700 feet.	Siolak Daras 3,000 feet.	Barong Bharu 4,000 feet.	Sungei Kumbang 4,700 feet.	Korinchi Peak 7,300 feet.	Korinchi Peak 10,000 feet.
1. <i>Arboricola rubrirostris</i> (Salvad.) ..				x		x	x	
2. <i>Caloperdix oculea sumatrana</i> , Grant		x						
<i>Rollulus roulroul</i> (Scop.) ..	x							
3. <i>Acomus inornatus</i> , Salvad. ..					x		x	
4. <i>Chalcurus chalcurus</i> (Less.) ..		x		x		x		
5. <i>Sphenocercus korthalsi</i> (Temm.) ..					x		x	x
6. <i>Sphenocercus oxyurus</i> (Temm.) ..	x	x	x			x		
7. <i>Osmotreron vernans</i> (Linn.) ..	x	x	x					
8. <i>Ptilinopus roseicollis</i> (G. R. Gr.) ..						x	x	
9. <i>Carpophaga badia</i> (Raffles) ..						x	x	
10. <i>Macropygia leptogrammica</i> (Temm.)				x		x	x	x
11. <i>Macropygia ruficeps nana</i> , Strese-								
mann ..		x		x	x	x		
12. <i>Turtur tigrinus</i> (Temm. & Knip) ..		x		x				
13. <i>Chalcophaps indica</i> (Linn.) ..						x		
14. <i>Scolopax saturata</i> , Horsf. ..						x	x	x
15. <i>Rhyacophilus glareola</i> (Gm.) ..			x					
16. <i>Hypotaenidia striata</i> (Linn.) ..				x				
17. <i>Poliolimnas cinereus</i> (Vieill.) ..		x						
18. <i>Limnobaenus fuscus</i> (Linn.) ..		x	x					
19. <i>Amaurornis phaenicura javanica</i>								
(Horsf.) ..		x	x	x				
20. <i>Gallinula chloropus orientalis</i> ,								
Horsf. ..		x	x					
21. <i>Porphyrio calvus</i> , Vieill. ..		x						
22. <i>Anas superciliosa</i> (Gm.) ..		x	x					
23. <i>Dendrocynna javanica</i> (Horsf.) ..		x						
24. <i>Phoebastria purpurea manillensis</i>								
(Meyen) ..		x		x				
25. <i>Mesophoebastria intermedia</i> (Hasselt)		x						
26. <i>Bubulcus coromandus</i> (Bodd.) ..				x				
27. <i>Ardetta sinensis</i> (Gm.) ..		x						
28. <i>Ardetta cinnamomea</i> (Gm.) ..		x						
29. <i>Accipiter virgatus virgatus</i> (Temm.)							x	
30. <i>Neopus malayensis</i> (Reinw.) ..						x		
<i>Spizaetus limnaetus</i> (Horsf.) ..	x							
31. <i>Spilornis barcha pallidus</i> , Walden ..					x			
32. <i>Haliastur indus intermedius</i> ,								
Gurney ..	x			x				
33. <i>Elanus hypoleucus</i> , Gould ..		x	x	x				
<i>Microhierax fringillarius</i> (Drap.) ..	x							
34. <i>Huhua orientalis sumatrana</i>								
(Raffles) ..				x				
35. <i>Pisorhina solokensis</i> , Hartert ..						x	x	
36. <i>Pisorhina lempiji</i> (Horsf.) ..		x						
37. <i>Pisorhina luciae</i> (Sharpe) ..				x				
38. <i>Pisorhina vandewateri</i> , Rob. and								
Kloss ..							x	
39. <i>Carcineutes pulchellus</i> (Horsf.) ..				x				
40. <i>Halcyon chloris</i> (Bodd.) ..		x		x				
41. <i>Rhytidoceros undulatus</i> (Shaw) ..				x		x		
42. <i>Anorrhinus galeritus</i> (Temm.) ..				x				
<i>Merops viridis</i> , Linn. ..	x							

TABLE SHOWING DISTRIBUTION AND ALTITUDE OF BIRDS
COLLECTED ACCORDING TO STATIONS—Continued.

Species.	Pasir Ganting Sea level.	Sandaran Agong 2,450 feet	Sungei Penoh 2,700 feet	Siolak Daras 3,000 feet	Barong Bharu 4,000 feet	Sungei Kumbang 4,700 feet	Korinchi Peak 7,300 feet.	Korinchi Peak 10,000 feet.
43. Nyctiornis amicta (Temm.) ..	x							x
Caprimulgus affinis, Horsf. ..	x							
44. Lyncornis temminckii, Gould ..		x						
45. Tachornis infumata (Sclat.) ..				x				
Hemiprocne longipennis harterti, Stresemann ..	x							
46. Collocalia linchi, Horsf. & Moore ..				x	x			
Pyrotrogon duvauceli (Temm.) ..	x							
47. Hapalarpactes mackloti (S. Muell.) ..		x		x		x	x	
48. Surniculus lugubris brachyurus Stresemann ..	x			x				
49. Cacomantis sepulchralis sepulchra- lis (S. Muell.) ..			x					
50. Penthoceryx sonnerati pravata (Horsf.) ..		x						
51. Cuculus intermedius insulinde, Hartert ..					x	x	x	
52. Rhopodytes tristis elongatus (S. Muell.) ..		x		x		x		
Rhopodytes diardi, Less. ..	x							
Rhinortha chlorophaea (Raffles) ..	x							
Centropus rectunguis, Strickl. ..	x							
53. Centropus bengalensis javanensis (Dumont) ..		x	x	x				
54. Calorhamphus hayi (J. E. Grey) ..		x						
55. Chotorhea chrysopogon chrysopo- gon (Temm.) ..	x	x						
56. Cyanops oorti (S. Muell.) ..		x	x	x				
Mesobucco duvauceli (Less.) ..	x							
57. Xantholaema haemacephala (P.L.S. Mull.) ..	x	x		x				
58. Psilopogon pyrolophus, S. Muell ..			x	x	x	x	x	
59. Gecinus dedemi, Van Oort ..						x		
60. Iyngipicus auritus (Eyton) ..	x							
61. Lepocestes porphyromelas (Boie) ..				x		x	x	
Miglyptes tukki (Less.) ..	x							
62. Micropternus brachyurus badius (Raffles) ..		x						
Tiga javanensis (Ljung) ..	x							
63. Chrysophlegma mystacale, Salvad ..				x	x	x		
64. Chrysophlegma miniatum malac- cense (Lath.) ..	x	x						
65. Chrysocolaptes validus zanthopy- gius, Finsch ..		x		x		x	x	
66. Psarisomus dalhousiae psittacinus (S. Muell.) ..				x		x		
67. Serilophus lunatus intensus, Rob & Kloss ..				x				
68. Eurylaemus ochromelas, Raffles ..		x						
Cymborhynchus macrorhynchus macrorhynchus (Gm.) ..	x							
69. Pitta schneideri, Hartert ..						x	x	
70. Pitta venusta, S. Muell ..		x		x				
71. Hirundo rustica gutturalis, Scop. ..				x				

TABLE SHOWING DISTRIBUTION AND ALTITUDE OF BIRDS
COLLECTED ACCORDING TO STATIONS—*Continued.*

Species.	Pasir Gaeting Sea level.	Sandaran Agong 2,450 feet.	Sungei Penoh 2,700 feet.	Siolak Daras 3,000 feet.	Barong Bharu 4,000 feet.	Sungei Kumbang 4,700 feet.	Korinchi Peak 7,300 feet.	Korinchi Peak 10,000 feet.
72. <i>Hirundo javanica</i> , Sparrm ..		x						
<i>Cyornis cantatrix</i> (Temm.) ..	x							
73. <i>Cyornis unicolor infuscata</i> , Hartert ..				x				
74. <i>Tarsiger hodgei</i> (Moore) ..						x	x	
75. <i>Anthipes solitaria</i> (S. Muell.) ..				x	x			
76. <i>Niltava grandis decipiens</i> Salvad. ..				x	x			
77. <i>Niltava sumatrana</i> , Salvad. ..							x	x
78. <i>Poliomyias mugimaki</i> (Temm.) ..			x	x		x		
79. <i>Dendrobiastes hyperythra malayana</i> (Grant) ..				x		x	x	
80. <i>Muscicapula melanoleuca westermanni</i> , Sharpe ..					x	x	x	
81. <i>Gerygone modiglianii</i> , Salvad ..			x					
82. <i>Hypothymis azurea prophata</i> , Oberholser ..				x				
83. <i>Rhipidura albicollis atrata</i> , Salvad ..				x		x		
84. <i>Terpsiphone paradisi affinis</i> (Blyth) ..		x		x				
85. <i>Philentoma velata</i> (Temm.) ..				x				
<i>Philentoma pyrhoptera</i> (Temm.) ..	x							
86. <i>Rhinomyias olivacea brunneicauda</i> (Salvad) ..				x				
87. <i>Culicicapa ceylonensis</i> (Swains.) ..				x	x	x	x	
88. <i>Cryptolopha sumatrensis</i> , Rob & Kloss ..						x	x	
89. <i>Cryptolopha muelleri</i> , Rob. & Kloss ..					x			
90. <i>Cryptolopha trivirgata</i> (Strickl.) ..					x	x	x	x
91. <i>Abrornis supercilii</i> schwaneri (Blyth) ..		x	x					
92. <i>Stoparola indigo ruficrissa</i> , Salvad ..				x	x	x	x	
93. <i>Stoparola thalassinioides</i> (Cab.) ..			x	x				
94. <i>Artamides melanocephalus</i> (Salvad.) ..				x		x	x	
95. <i>Pericrocotus xanthogaster</i> (Raffles) ..		x	x					
96. <i>Pericrocotus montanus</i> , Salvad ..				x	x	x		
97. <i>Pericrocotus miniatus</i> (Temm) ..					x	x	x	
98. <i>Lalage fimbriata culminata</i> (Hay) ..				x				
99. <i>Lalage terat</i> (Bodd) ..			x					
100. <i>Chloropsis media</i> (Bp) ..		x	x	x				
101. <i>Chloropsis venusta</i> (Bp.) ..				x				
<i>Irene puella crinigera</i> , Sharpe ..	x							
102. <i>Hemixus sumatranus</i> , Wardl. Rams. ..				x	x	x	x	
<i>Microtarsus melanoleucus</i> , Eyton ..	x							
103. <i>Gymnocrotaphus tygus</i> (Bp.) ..				x				
104. <i>Alcurus leucogrammicus</i> (S. Muell.) ..				x				
<i>Micropus melanocephalus</i> (Gm.) ..	x							
105. <i>Criniger sumatranus</i> , Wardl. Rams. ..				x				
106. <i>Trachycomus ochrocephalus</i> (Gm.) ..	x	x	x	x				
107. <i>Pycnonotus analis</i> (Horsf.) ..	x	x	x					
108. <i>Pycnonotus bimaculatus</i> (Horsf.) ..			x	x		x	x	
<i>Pycnonotus plumosus</i> , Blyth ..	x							
<i>Pycnonotus simplex</i> , Less. ..	x							

TABLE SHOWING DISTRIBUTION AND ALTITUDE OF BIRDS
COLLECTED ACCORDING TO STATIONS—Continued.

Species.	Pasir Gantang Sea level.	Sandarag Agung 2,450 feet.	Sungei Penoh 2,700 feet.	Siolak Daras 3,000 feet.	Barong Bharu 4,000 feet.	Sungei Kumbang 4,700 feet.	Korinchi Peak 7,300 feet.	Korinchi Peak 10,000 feet.
Rubigula dispar (Horsf.) ..	x							
109. Eupetes macrocerus, Temm. ..		x						
110. Pomatorhinus borneensis (Cab.) ..		x						
111. Garrulax bicolor, Hartl. ..		x	x					
112. Garrulax palliatus (Temmm.) ..				x				
113. Melanocichla lugubris (S. Muell.) ..		x		x	x	x	x	
114. Rhinocichla mitrata (S. Muell.) ..		x	x	x	x	x		
115. Turdinus rupectus, Salvad. ..				x			x	
116. Malacocincla sepiaria (Horsf.) ..				x				
Erythrochichla bicolor (Less.) ..	x							
Drymocapthus nigrocapitata (Eyton) ..	x							
Aethostoma rostratum (Blyth) ..	x							
117. Turdinulus epilepidota dilutus, Rob. & Kloss ..		x		x		x		
118. Rimator albobstriatus, Salvad ..						x		
119. Alcippe cinerea, Blyth ..		x						
Stachyris nigricollis (Temmm.) ..	x							
120. Stachyris larvata (S. Muell.) ..		x		x	x	x	x	
121. Stachyridopsis chrysaea bocagii (Salvad.) ..				x	x	x		x
122. Stachyridopsis poligaster (Hume)		x						
123. Thringorhina striolata (S. Muell.)		x		x	x	x	x	
Macronus ptilosus, Jard. & Selby	x							
124. Mixornis ruficapilla sumatrana (Bp) ..	x	x						
125. Arrenga castaneus, Wardl. Rams.				x	x	x		
126. Arrenga melanura, Salvad. ..				x	x	x	x	x
127. Myiophoneus flavirostris dicror- hynchus, Salvad. ..				x				
128. Heteroxenicus saturata (Salvad.) ..							x	x
129. Heteroxenicus leucophrys (Temmm.)					x	x		
130. Sibia picaoides similima (Salvad.)				x	x	x	x	x
131. Mesia laurinae (Salvad.) ..					x	x	x	
132. Pnoepyga pusilla lepida, Salvad.				x	x	x	x	x
133. Geocichla interpres (Temmm.) ..		x						
134. Zoothera andromedae (Temmm.) ..							x	
135. Cichloselys sibirica davisoni (Hume) ..				x			x	x
136. Oreocincla aureus horsfieldi (Bp.)							x	x
137. Turdus indrapuræ, Rob. & Kloss								x
138. Henicurus velatus, Temmm. ..		x		x	x	x	x	
139. Henicurus frontalis, Blyth ..						x		
140. Cochoa beccarii, Salvad. ..					x	x		
141. Larvivora cyanea (Pall.) ..				x				
142. Notodela diana sumatrana, Rob. & Kloss ..						x		
143. Copsychus saularis musicus (Raffles) ..		x						
Kittacincla macrurus macrurus (Gm.) ..	x							
144. Cettia sumatrana, Grant ..							x	x
145. Orthotomus ruficeps (Less.) ..		x						
146. Cisticola cisticola (Temmm.) ..		x	x					

TABLE SHOWING DISTRIBUTION AND ALTITUDE OF BIRDS
COLLECTED ACCORDING TO STATIONS—*Continued.*

Species.	Pasir Ganting Sea level.	Sandaran Agong 2,450 feet.	Sungei Penoh 2,700 feet.	Siolak Daras 3,000 feet.	Barong Bharu 4,000 feet.	Sungei Kumbang 4,700 feet.	Korinchi Peak 7,300 feet.	Korinchi Peak 10,000 feet.
147. <i>Phylloscopus borealis</i> (Blas.) ..						x		
148. <i>Phyllergates cucullatus sumatranus</i> , Salvad. ..							x	
149. <i>Suya superciliaris albigularis</i> , Hume ..		x	x	x		x		
<i>Burnesia flaviventris</i> (Deless.) ..	x							
<i>Tephrodornis gularis</i> (Raffles) ..	x							
<i>Hemipus obscurus</i> (Horsf.) ..	x							
150. <i>Hemipus picatus</i> (Sykes) ..		x		x		x	x	
151. <i>Platylophus coronatus</i> (Raffles) ..		x						
152. <i>Lanius bentet</i> , Horsf. ..		x	x	x				
153. <i>Lanius lucionensis</i> , Liun. ..				x				
154. <i>Pteruthius aeralatus cameranoi</i> , Salvad. ..				x	x	x	x	
155. <i>Parus major malayorum</i> , Rob. & Kloss ..					x	x	x	x
<i>Dendrophila frontalis</i> (Horsf.) ..	x							
156. <i>Poliositta azurea expectata</i> (Hartert) ..				x	x	x	x	
157. <i>Corvus enca compiler</i> Richmond ..			x					
158. <i>Dendrocitta occipitalis</i> (S. Muell.) ..		x	x	x		x	x	
159. <i>Cissa chinensis minor</i> , Cab. ..					x	x		
<i>Dissemurus paradiseus platurus</i> (Vieill.) ..	x							
160. <i>Dicruropsis sumatranus</i> (Wardl.) Rams.) ..		x		x	x			
161. <i>Buchanga leucophaea phaedra</i> , Reich. ..		x	x	x		x	x	
162. <i>Bhringa remifer</i> (Temm.) ..		x		x	x	x	x	
163. <i>Oriolus maculatus</i> , Vieill. ..		x	x	x				
164. <i>Oriolus xanthonotus</i> (Horsf.) ..				x				
165. <i>Oriolus cruentus consanguineus</i> (Wardl. Rams.) ..				x	x	x	x	
166. <i>Artamus leucogaster</i> (Valenc.) ..		x	x	x				
167. <i>Aplonis panayensis strigatus</i> (Horsf.) ..	x	x		x				
168. <i>Ploceus passerinus infortunatus</i> , Hartert ..		x		x				
169. <i>Munia punctulata nisoria</i> (Temm.) ..				x				
170. <i>Munia acuticauda</i> (Hodgs.) ..			x					
171. <i>Munia maja</i> (Linn.) ..				x				
172. <i>Dendronanthus indicus</i> (Gm.) ..				x				
173. <i>Anthus richardi malayensis</i> (Eyton) ..				x				
174. <i>Aethopyga siparaja</i> (Raffles) ..	x	x	x					
175. <i>Aethopyga temminckii</i> (Muell. & Schleg.) ..				x	x	x		
176. <i>Cyrtostomus ornata</i> (Less.) ..								
177. <i>Anthothreptes malaccensis</i> (Scop.) ..	x		x					
<i>Anthothreptes simplex</i> (S. Muell.) ..	x							
<i>Chalcoparia singalensis</i> (Gm.) ..	x							
178. <i>Arachnothera longirostra</i> (Lath.) ..		x				x		
179. <i>Arachnothera chrysogenys</i> , Temm. ..						x		
180. <i>Arachnothera flavigaster</i> (Eyton) ..		x		x		x		

TABLE SHOWING DISTRIBUTION AND ALTITUDE OF BIRDS
COLLECTED ACCORDING TO STATIONS—*Continued.*

Species.								
	Pasir Ganting Sea level.	Sandaran Agong 2,450 feet.	Sungei Penoh 2,700 feet.	Siolak Daras. 3,000 feet.	Barong Bharu 4,000 feet.	Sungei Kumbang 4,700 feet.	Korinchi Peak 7,300 feet.	Korinchi Peak 10,000 feet.
181. <i>Arachnothera robusta robusta</i> (Muell & Schleg.) ..				x		x		
182. <i>Dicaeum sumatranum</i> , Cab. ..		x						
183. <i>Dicaeum beccarii</i> , Rob. & Kloss ..				x			x	
184. <i>Zosterops montana</i> , Bp. ..							x	
185. <i>Zosterops atricapilla</i> , Salvad. ..					x		x	x
186. <i>Zosterops buxtoni</i> , Nicholson ..		x	x	x				
Total species collected at each station	57	86	38	114	49	82	59	17

II A. NESTS AND EGGS.

Hapalarpactes mackloti (S. Muell.).

antea, p. 133.

Two eggs from Siolak Daras, 3,000 feet, stated to be from a hole in a tree, were brought in with the male parent on March 24, 1918.

They are pure white, slightly glossy, with a faintly roughened surface without pores or pits.

In shape they are blunt ovals only very slightly, if at all, more pointed at one end than another.

They measure: A, 23 by 27.4; B, 23.9 by 28.8 mm.

Serilophus lunatus *Intensus*, Rob. & Kloss.

antea, p. 150.

A nest with two eggs, and a third, presumably of a cuckoo, were obtained at Siolak Daras on 22nd March 1914, together with the male parent.

The nest was suspended at the end of a long tendril some distance above the ground and is of the usual broad-bill type, an untidy pear-shaped mass, composed chiefly of moss externally, the cavity with the entrance at one side furnished with an overhanging eave, and is lined with dead bamboo and other leaves, tendrils and other fibre.

The two eggs which belong to the bird are much pointed ovals; the surface, matt in one and slightly glossy in the other; ground colour pure white faintly spotted with small reddish chocolate spots more thickly distributed round the larger end. They measure: A, 18 by 26.5; B, 17.2 by 26.7 mm.

Expedition to Korinchi:

The third egg alone is slightly glossy, white with no mark whatever and measures 14.7 by 18.8 mm., being much more pyriform in shape than the other eggs. Davison in Hume's *Nests and Eggs* (2nd ed.) ii, p. 291 (1890), records a similar egg found by him in a nest of *Serilophus lunatus* at Amherst in Tenasserim.

***Dendrobiastes hyperythra malayana* (Grant).**

antea, p. 159.

A nest with two eggs, reported to be of this species, was obtained at 7,300 feet on Korinchi Peak, on 2nd May, 1914.

The nest is a deep roofed-in cup, about 120 mm. high and 70 mm. in diameter, built of moss slightly mixed with slender fern filaments and having the bottom of the cup lined with the latter.

The eggs are pure white with a matt surface and in shape are blunt ovals.

Size: A, 12.8 by 17.2; B, 12.6 by 17.5 mm.

***Pycnonotus analis* (Horsf.).**

antea, p. 179.

A nest with two eggs (parent not secured), obtained at Sandaran Agong, 2,450 feet, on 6th June 1914.

The nest is cup-shaped, composed of twigs and coarse grass and lined with finer grass.

The eggs are glossy pointed ovals, ivory coloured, largely covered with irregular spots and blotches of reddish brown and with a few indistinct grey blotches.

Size: A, 17 by 23.8; B, 16.4 by 23.4 mm.

***Rhinocichla mitrata* (S. Muell.)**

antea, p. 186.

A nest with two eggs was obtained at Siolak Daras, 3,000 feet, in March, 1914.

The nest is cup-shaped and is constructed of fern stems and rhizomorphs with an external covering of moss.

The eggs are pure white in colour and glossy; in shape blunt ovals.

Size: A, 20.2 by 26; B, 20 by 25.8 mm.

***Thingorhina striolata* (S. Muell.).**

antea, p. 195.

A nest and three eggs were obtained at Siolak Daras, 3,000 feet, on 22nd March, 1914. [Parent bird No. 320.]

The nest is cup-shaped and composed of bamboo leaves.

The eggs are glossy white blunt ovals, only slightly smaller at one end than the other.

Size: 16.5 by 21.4 mm.

Suya superciliaris albigularis, Hume.

antea, p. 219.

A nest and three eggs, reported to be those of this bird, was obtained at Siolak Daras, 3,000 feet, on 24th March, 1914.

The nest is domed, composed of fine grass and attached to several bents or stems of coarse grass.

The eggs are pale, greenish-blue, blotched and spotted with purplish brown and are blunt ovals in shape.

Size: A, 13.1 by 18.1; B, 12.8 by—mm.

Buchanga leucophaea phaedra, Rehnw.

antea, p. 233.

Nest with one egg from Sandaran Agong, 2,450 feet, taken in May, 1914.

Nest cup-shaped; of twigs, fine grass and a little moss; lined with grass.

Eggs blunt oval, matt white, coarsely spotted with chocolate and lavender-grey.

Size: 18.5 by 23.6 mm.

Munia punctulata nisoria (Temm.).

antea, p. 239.

A clutch of four eggs from Siolak Daras, 3,000 feet, taken in March, 1914.

Eggs elongate blunt ovals in shape, matt white in colour.

Size: A, 11.2 by 16; B, 11.3 by 16.1; C, 11.1 by 15.6; D, 11.1 by 15.3 mm.

APPENDIX.

A NOMINAL LIST OF THE SPECIES OF BIRDS CERTAINLY
KNOWN TO OCCUR IN SUMATRA.

Only two lists of the Birds of Sumatra have hitherto appeared. Of the first, by H. O. FORBES, published in an appendix to his book "A Naturalist's Wanderings in the Eastern Archipelago," (London, 1885), pp. 268-274, little need be said. It is avowedly a compilation bearing marks of haste in its preparation and in view of the fact that the "Catalogue of Birds" was then in its infancy, was necessarily based on extremely incomplete data. It contains 325 names.

The second, by A. G. VORDERMAN, entitled "Les Oiseaux de Sumatra et leur présence dans les îles avoisantes," contained in the *Natuurkundig Tijdschrift voor Nederlandsch-Indie*, vol. xlix, pp. 382-442 (Batavia, 1890), is in every way a better and more comprehensive list, containing about 497 species certainly recognized, besides a very large number that are presumed by the author to occur. It is, however, marred by the fact that a large number of Javan species are included on insufficient evidence and by the lack of critical examination of the species, many purely nominal forms being accepted which are absolute pure synonyms of others already in the list.

For the sake of uniformity with similar compilations of the birds of neighbouring countries, we have, in the present list, adopted the arrangement followed in "A Hand-list of the Genera and Species of Birds, Vols. I-V, London, 1899-1912," though this is in many ways an inconvenient and extremely artificial one, based on a strictly binomial nomenclature.

Certain apparent inconsistencies should be explained. Where species undoubtedly stand in subspecific relationship to forms from other countries¹ the fact is so indicated by the use of trinomials, though where binomials are used it must not be considered that the species so indicated are specially distinct but that they are either the *forma typica* of the species or belong to genera which have not yet been monographically dealt with, so that the use of trinomials in their case would, in the present state of our knowledge, merely confuse the student of Oriental Ornithology.

As regards nomenclature we have, for the most part, followed the laws of priority, but in certain cases where the use of these has involved the adoption of false concords or the perpetuation of obvious misprints or *lapsus calami*, the dictates of commonsense have been consulted.

¹ "A Hand-list of the Birds of the Malay Peninsula, South of the Isthmus of Kra," by H. C. Robinson, pp. 1-22, Kuala Lumpur, 1910. "Hand List of the Birds of Borneo," by J. C. Moulton, Journal, Straits Branch, Roy. Asiatic Society, No. 67, pp. 126-191, Singapore, 1914.

We have not consistently followed the 10th rather than the 12th edition of the "Systema-Naturae."

In the matter of genera, which in ornithology are more artificial than in almost any other group of the animal kingdom, we have been still more conservative, and have eschewed the use of many proposed by Mathews, Oberholser and others, though we frankly confess that the attitude taken up is not strictly logical and that the genus-splitter may, after all, be able to maintain his opinions by arguments at least as cogent as those that are now so generally admitted in favour of his cousin, the species-splitter.

The geographical limits of the present list are strictly those of the main island of Sumatra; the inclusion of the western and south-eastern groups of islands might have rendered it more complete, but while the latter groups have not been intensively studied and do not therefore harbour many peculiar named races, the former have been largely collected on and are supposed to contain some 150 species peculiar to them, whose affinities and relative distinctness are at present in many cases known only to the describers. Under these circumstances and in the absence of actual material it has been thought best to leave well alone and omit all the islands, the more so as the peculiar element that does exist in the western chain is no more nearly related to the avifauna of Sumatra than it is to that of Java and the mainland of Indo-Malaya.

We have not attempted to emulate Moulton in his Hand-list of the Birds of Borneo¹ and give exact details of the first collector of each Sumatran species. Work in Sumatra dates from an earlier period than in Borneo and the greater part of the details, even where they exist, which is by no means always the case, are buried in Dutch and French periodicals that are not accessible to us.

We have, therefore, contented ourselves with giving the reference to the name adopted for each species. This is by no means always the first *description* as earlier names are often untenable for one reason or another.

It will be seen that the present list comprises 527 names, while Borneo has 555 species and the Malay Peninsula about 630. Taking into account the fact that the marine and littoral species are not very well known from Sumatra, while migratory species are by no means well represented, it will probably be found that the island is inhabited by well over 600 species, so that its fauna is relatively decidedly richer than that of Borneo (which is of very much greater area), though it does not contain so many markedly differentiated forms.

¹ Journ. Straits Branch, Roy. Asiat. Soc., No. 67, pp. 125-191, (1914).

APPENDIX.

ORDER GALLIFORMES.

FAMILY PHASIANIDAE

- | | |
|---|---|
| <p>1 Rhizothera longirostris (Temm.).
<i>Perdix longirostris</i>, Temminck, Fig. et Gallin. iii, p. 323, 721 (1815).</p> <p>2 Arboricola rubrirostris (Salvad.).
<i>Peliperdix rubrirostris</i>, Salvadori, Ann. Mus. Civ. Gen. xiv, p. 251 (1879).</p> <p>3 Arboricola rolli, Rothschild.
Rothschild, Bull. Brit. Orn. Club. xxv, p. 7 (1909).</p> <p>4 Arboricola orientalis subsp. sumatrana, Ogilvie Grant.
<i>Arborophila sumatrana</i>, Ogilvie Grant, Ann. and Mag. Nat. Hist. (6) viii, p. 297 (1891).</p> <p>5 Caloperdix oculatea subsp. sumatrana, Ogilvie Grant.
<i>Caloperdix sumatrana</i>, Ogilvie Grant, Bull. Brit. Orn. i, p. 5 (1892).</p> <p>6 Rollulus roulroul (Scop.).
<i>Phasianus roulroul</i>, Scopeli, Del. Faun. et Faun. Insubr. ii, p. 93 (1786).</p> <p>7 Melanoperdix nigra (Vig.).
<i>Cryptonyx niger</i>, Vigors, Zool. Journ. iv, p. 349 (1829).</p> <p>8 Excalfactoria chinensis subsp. chinensis (Linn.).
<i>Tetrao chinensis</i>, Linnaeus, Syst. Nat. i, p. 277 (1766).</p> | <p>9 Excalfactoria chinensis, subsp. lineata (Scop.).
<i>Oriolus lineatus</i>, Scopeli, Del. Flor. et Faun. Insubr. ii, p. 87 (1786).</p> <p>10 Acomus erythrophthalmus (Raffles).
<i>Phasianus erythrophthalmus</i>, Raffles, Trans. Linn. Soc. xiii, p. 321 (1822).</p> <p>11 Acomus inornatus, Salvad.
Salvadori, Ann. Mus. Civ. Gen. xiv, p. 250 (1879).</p> <p>12 Lophura rufa (Raffles).
<i>Phasianus rufus</i>, Raffles, Trans. Linn. Soc. xiii, p. 321 (1822).</p> <p>13 Lophura sumatrana (Dubois).
<i>Euplocamus sumatranus</i>, Dubois, Bull. Acad. Belg. (2) xlvii, p. 825 (1879).</p> <p>14 Gallus gallus (Linn.).
<i>Phasianus gallus</i>, Linnaeus, Syst. Nat. i, p. 270 (1766).</p> <p>15 Polyplectron malaccensis (Scop.).
<i>Phasianus malaccensis</i>, Scopeli, Del. Flor. et Faun. Insubr. ii, p. 93 (1786).</p> <p>16 Chalcurus chalcurus (Less.).
<i>Polyplectrum chalcureum</i>, Lesson, Traite d'Orn. p. 487 (1831).</p> <p>17 Argusianus argus (Linn.).
<i>Phasianus argus</i>, Linnaeus, Syst. Nat. i, p. 272 (1766).</p> <p>18 Pavo muticus, Linn.
Linnaeus, Syst. Nat. i, p. 268 (1766).</p> |
|---|---|

ORDER HEMIPODII.

- 19 **Turnix taigoor** subsp. **pugnax** (Temm.).
Hemipodius pugnax, Temminck, Fig. et Gall. iii, pp. 612, 754 (1815).

ORDER COLUMBIFORMES.

- | | |
|--|--|
| <p>20 Butoreron capellei (Temm.).
<i>Columba capellei</i>, Temminck, Pl. Col. 143 (1823).</p> <p>21 Sphenocercus oxyurus (Reinw.).
<i>Columba oxyura</i>, Reinw. MS. in Temminck, Pl. Col. 24c (1823).</p> | <p>22 Sphenocercus korthalsi (Temm.).
<i>Columba korthalsi</i>, Temm. MS. in G. R. Gray, List. Gallinae Brit. Mus. p. 4 (1844).</p> |
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- 23 **Treron curvirostra** subsp. **curvirostra** (Raffles).
Columba curvirostra, Raffles, Trans. Linn. Soc. xiii, p. 318 (1822).
- 24 **Osmotreron griseicauda** (G. R. Gr.).
Treron griseicauda, G. R. Gray, List. B. Brit. Mus., Columbæ, p. 10 (1856).
- 25 **Osmotreron fulvicollis** subsp. **fulvicollis** (Wagl.).
Columba fulvicollis, Wagler, Syst. Av. Columba, sp. 8 (1827).
- 26 **Osmotreron vernans** (Linn.).
Columba vernans, Linnaeus, Mant. p. 526 (1771).
- 27 **Osmotreron olax** (Temm.).
Columba olax, Temminck, Pl. Col. 241 (1823).
- 28 **Ptilinopus roseicollis** (G. R. Gr.).
G. R. Gray, Gen. Birds, ii, p. 467, n. 21 (1844).
Columba porphyrea, Reinw. n. Temm. Pl. Col. 106 (1824).
- 29 **Ptilinopus jambu** (Gm.).
Columba jambu, Gmelin, Syst. Nat. ii, 2, p. 784, n. 63 (1788).
- 30 **Carpophaga ænea** (Linn.).
Columba ænea, Linnaeus, Syst. Nat. i, p. 283 (1766).
- 31 **Carpophaga badia** (Raffles).
Columba badia, Raffles, Trans. Linn. Soc. xiii, p. 317 (1822).
- 32 **Myristicivora bicolor** (Scop.).
Columba bicolor, Scopeli, Del. Flor et Faun. Insubr. ii, p. 94, n. 97 (1786).
- 33 **Columba phasma**, Richmond.
Columba phasma, Proc. U. S. Nat. Mus. xxvi, p. 490 (1903).
- 34 **Macropygia leptogrammica** (Temm.).
Columba leptogrammica, Temminck, Pl. Col. 560 (1835).
- 35 **Macropygia ruficeps** subsp. **nana**, Stresemann.
Macropygia ruficeps nana, Streseman, Nov. Zool. xx, p. 311 (1913).
- 36 **Streptopelia suratensis** subsp. **tigrina** (Temm. and Knip).
Columba tigrina, Temm. and Knip, Fig. pl. 43 (1808-11).
- 37 **Geopelia striata** (Linn.).
Columba striata, Linnaeus, Syst. Nat. i, p. 282, no. 18 (1766).
- 38 **Chalcophaps indica** (Linn.).
Columba indica, Linnaeus, Syst. Nat. i, p. 284, no. 29 (1766).
- 39 **Caloenas nicobarica** (Linn.).
Columba nicobarica, Linnaeus, Syst. Nat. i, p. 283, no. 27 (1766).

ORDER RALLIFORMES.

- 40 **Hypotaenidia striatus** (Linn.).
Rallus striatus, Linnaeus, Syst. Nat. i, p. 262 (1766).
- 41 **Rallina fasciata** (Raffles).
Rallus fasciatus, Raffles, Trans. Linn. Soc. xiii, p. 328 (1822).
- 42 **Rallina superciliaris** (Eyt.).
Rallus superciliaris, Eyton, Ann. & Mag. Nat. Hist. xvi, p. 230 (1845).
Hartert Nov. Zool. ix, p. 219.
- 43 **Poliolimnas cinereus** (Vieill.).
Porphyrio cinereus, Vieillot, Nouv. Dict. xxviii, p. 29 (1819).
- 44 **Limnobaenus fuscus** (Linn.).
Rallus fuscus, Linnaeus, Syst. Nat. i, p. 262 (1766).
- 45 **Amaurornis phoenicura** subsp. **javanica** (Horsf.).
Gallinula javanica, Horsfield, Trans. Linn. Soc. xiii, p. 196 (1821).
- 46 **Gallinula chloropus** subsp. **orientalis**, Horsf.
Gallinula orientalis, Horsfield, Trans. Linn. Soc. xiii, p. 195 (1821).
- 47 **Porphyrio poliocephalus** subsp. **bemmeleni**, Buttik.
Porphyrio bemmeleni, Buttikofer, Notes Leyden Mus. xi, p. 191 (1889).
- 48 **Porphyrio calvus** (Vieill.).
Porphyrio calvus, Vieillot, Nouv. Dict. xxviii, p. 28 (1819).
- 49 **Fulica atra** subsp. **lugubris**, S. Müll.
Fulica lugubris, Sal. Müller, Verh. Nat. Ges. Land-en Volkenk, p. 454 (1839-44).
- 50 **Heliopais personata** (G. R. Gr.).
Podica personata, G. R. Gray, P.Z.S. 1848, p. 90, Aves Pl. 4.

ORDER PODICIPEDIDIFORMES.

- 51 **Podiceps fluviatilis** subsp. **philippensis** (Bonn.).
Colymbus philippensis, Bonnerat Tall. Encycl. Méth. i, p. 58, pl. 46, fig. 3 (1790).

Expedition to Korinchi:

ORDER LARIFORMES.

- 52 **Hydrochelidon leucoptera** (Meisn. & Schinz).
Sterna leucoptera, Meisner & Schinz, Vog. Schweiz, p. 264 (1815).
- 53 **Gelochelidon anglica** (Mont.).
Sterna anglica, Montague, Orn. Dict. Suppl. fig. (1813).
- 54 **Sterna tibetana**, Saunders.
Sterna tibetana, Saunders, P. Z. S. 1876, p. 649.
- 55 **Sterna dougalli**, Mont.
Sterna dougalli, Montague, Orn. Dict. Suppl. fig. (1813).
- 56 **Sterna media**, Horsf.
Sterna media, Horsfield, Trans. Linn Soc. xiii, p. 198 (1821).
- 57 **Sterna bergii** Licht.
Sterna bergii, Lichtenstein, Verz. Doubl. p. 80 (1823).
- 58 **Sterna anaethetus**, Scop.
Sterna anaethetus, Scopeli Del. Flor. et Faun. Insubr. i, p. 92 (1786).
- 59 **Sterna sinensis**, Gm.
Sterna sinensis, Gmelin Syst. Nat. i, p. 608 (1788).
- 60 **Sterna minuta**, Linn.
Sterna minuta, Linnaeus, Syst. Nat. i, p. 228 (1766).
- 61 **Sterna saundersi**, Hume.
Sterna saundersi, Hume Stray Feath. v. pp. 324-6 (1877).
- 62 **Sterna sumatrana**, Raffles.
Sterna sumatrana, Raffles, Trans. Linn. Soc. xiii, p. 329 (1823).
- 63 **Anous stolidus** (Linn.).
Sterna stolidus, Linnaeus, Amoen. Acad. iv, p. 240 (1759).
- 64 **Micranous leucocapillus** (Gould).
Anous leucocapillus, Gould, P. Z. S. 1845, p. 103.

ORDER TUBINARES.

- 65 **Oceanodroma monorhis** (Swinh.).
Thalassidroma monorhis, Swinhoe, Ibis, 1867, p. 386.

ORDER CHARADRIIFORMES.

- 66 **Arenaria interpres** (Linn.).
Tringa interpres, Linnaeus, Syst. Nat. i, p. 248 (1766).
- 67 **Xiphiodromus cucullatus** (Temm.).
Vanellus cucullatus, Temminck, Pl. Col. v, pl. 505 (1830).
- 68 **Sarcogrammus atronuchalis** (Jerd.).
Lobivanellus atronuchalis, Jerdon, Birds India, iii, p. 648 (1864).
- 69 **Squatarola hevetica** (Linn.).
Tringa helvetica, Linnaeus, Syst. Nat. i, p. 250 (1766).
- 70 **Charadrius dominicus** subsp. **fulvus** (Gm.).
Charadrius fulvus, Gmelin, Syst. Nat. i, p. 687 (1788).
- 71 **Ochthodromus geoffroyi** (Wagl.).
Charadrius geoffroyi, Wagler, Syst. Av. Charadrius, p. 61, no. 19 (1827).
- 72 **Ochthodromus mongolus** subsp. **mongolus** (Pall.).
Charadrius mongolus, Pallas, Reis. Russ. Reichs, iii, p. 700 (1776).
- 73 **Ochthodromus mongolus** subsp. **pyrrhorthorax** (Gould).
Charadrius pyrrhorthorax, Gould, Birds Europe, iv, pl. 299 (1837).
- 74 **Aegialitis dubia** (Scop.).
Charadrius dubius, Scopeli, Del. Flor. et Faun. Insubr. ii, p. 93 (1786).
- 75 **Aegialitis alexandrina** (Linn.).
Charadrius alexandrinus, Linnaeus, Syst. Nat. i, p. 258 (1766).
- 76 **Numenius arquata** (Linn.).
Scolopax arquata, Linnaeus, Syst. Nat. i, p. 242 (1766).
- 77 **Numenius phaeopus** (Linn.).
Scolopax phaeopus, Linnaeus, Syst. Nat. i, p. 243 (1766).

- 78 **Limosa lapponica** subsp. **novae-zealandiae**, G. R. Gr.
Limosa novae-zealandiae, G. R. Gray, Genera Birds, iii, p. 570 (1847).
- 79 **Limosa limosa** (Linn.).
Scolopax limosa, Linnaeus, Syst. Nat. i, p. 246 (1766).
- 80 **Totanus calidris** (Linn.).
Scolopax calidris, Linnaeus, Syst. Nat. i, p. 245 (1766).
- 81 **Tringoides hypoleucus** (Linn.).
Tringa hypoleucus, Linnaeus, Syst. Nat. i, p. 250 (1766).
- 82 **Terekia cinerea** (Guldenst.).
Scolopax cinerea, Guldenstart, Nov. Comm. Petrop. xix, p. 473, pl. 19 (1774).
- 83 **Glottis nebularius** (Gunner).
Scolopax nebularius, Gunner, Leem. Lapp. Besch. p. 251 (1767).
- 84 **Rhyacophilus glareola** (Gm.).
Tringa glareola, Gmelin, Syst. Nat. i, p. 677 (1788).
- 85 **Limonites ruficollis** (Pall.).
Trynga ruficollis, Pallas, Reis. Russ. Reichs. iii, p. 700 (1776).
- 86 **Limonites damacensis** (Horsf.).
Totanus damacensis, Horsfield, Trans. Linn. Soc. xiii, p. 192 (1821).
- 87 **Ancylochilus subarquatus** (Guldenst.).
Scolopax subarquata, Guldenstart, Nov. Comm. Petrop. xix, p. 471 (1774).
- 88 **Tringa crassirostris**, Temm. and Schleg.
Tringa crassirostris, Temminck and Schlegel, Faun. Jap. p. 107, pl. 64 (1847).
- 89 **Limicola platyrhyncha** (Temm.).
Tringa platyrhyncha, Temminck, Man. d'Orn. p. 398 (1815).
- 90 **Gallinago stenura** (Kuhl.).
Scolopax stenura, Kuhl. fide Bp. Ann. Stor. Nat. Bologna, iv, fasc. xiv, p. 335 (1830).
- 91 **Gallinago gallinago** (Linn.).
Scolopax gallinago, Linn. Syst. Nat. i, p. 244 (1766).
- 92 **Scolopax saturata**, Horsf.
Scolopax saturata, Horsfield, Trans. Linn. Soc. xiii, p. 191 (1821).
- 93 **Rostratula capensis** (Linn.).
Scolopax capensis, Linnaeus, Syst. Nat. i, p. 246 (1766).
- 94 **Metopidius indicus** (Lath.).
Parva indica, Lath. Ind. Orn. ii, p. 765 (1790).
- 95 **Glareola orientalis**, Leach.
Glareola orientalis, Leach, Trans. Linn. Soc. xiii, p. 132, pl. xiii (1820).

FAMILY IBIDIDAE.

- 96 **Ibis melanocephala** (Lath.).
Tantalus melanocephalus, Latham. Ind. Orn. ii, p. 709 (1790).

FAMILY CICONIIDAE.

- 97 **Pseudotantalus cinereus** (Raffles).
Tantalus cinereus, Raffles, Trans. Linn. Soc. xiii, p. 327 (1822).
- 98 **Dissoura episcopus** (Bodd.).
Ardea episcopus, Boddaert, Tabl. Pl. Enl. p. 54 (1783).
- 99 **Dissoura stormi** (Blas.).
Melanopelargus episcopus stormi, Blasius Monats. Ges. Lubeck, 120 (1896).
- 100 **Leptoptilus javanicus** (Horsf.).
Ciconia javanica, Horsfield, Trans. Linn. Soc. xiii, p. 188 (1821).

FAMILY ARDEIDAE.

- 101 **Pyrherodias purpurea** subsp. **manillensis** (Meyen).
Ardea purpurea, var. *maniliensis*, Meyen, Acta Acad. Leop. Carol. xvi, Suppl. p. 102 (1830).
- 102 **Ardea sumatrana**, Raffles.
Ardea sumatrana, Raffles, Trans. Linn. Soc. xiii, p. 325 (1822).
- 103 **Ardea cinerea**, Linn.
Ardea cinerea, Linnaeus, Syst. Nat. i, p. 236 (1766).
- 104 **Mesophoyx intermedia** (Wagl.).
Ardea intermedia, Wagler, Isis, 1829, p. 659.

- 105 **Herodias alba** (Linn.).
Ardea alba, Linnaeus, Syst. Nat. i, p. 239 (1766).
- 106 **Garzetta garzetta** (Linn.).
Ardea garzetta, Linnaeus, Syst. Nat. i, p. 237 (1766).
- 107 **Demiegretta sacra** (Gm.).
Ardea sacra, Gmelin, Syst. Nat. i, p. 640 (1788).
- 108 **Nycticorax nycticorax** (Linn.).
Ardea nycticorax, Linnaeus, Syst. Nat. i, p. 235 (1766).
- 109 **Gorsachius melanolophus** (Raffles).
Ardea melanolopha, Raffles, Trans. Linn. Soc. xiii, p. 326 (1822).
- 110 **Butorides javanica** (Horsf.).
Ardea javanica, Horsfield, Trans. Linn. Soc. xiii, p. 190 (1821).
- 111 **Bubulcus coromandus** (Bodd.).
Caneroma coromanda, Boddarta, Tabl. Pl. Enl. p. 54 (1783).
- 112 **Ardetta sinensis** (Gm.).
Ardea sinensis, Gmelin, Syst. Nat. i, p. 642 (1788).
- 113 **Ardetta cinnamomea** (Gm.).
Ardea cinnamomea, Gmelin, Syst. Nat. i, p. 643 (1788).
- 114 **Ardetta pulchra**, Hume.
Ardetta pulchra, Hume, Stray Feath. i, pp. 308, 309, 422 (1873).
- 115 **Dupetor flavicollis** (Lath.).
Ardea flavicollis, Latham, Ind. Orn. ii, p. 701 (1790).

FAMILY ANATIDAE.

- 116 **Asarcornis scutulata** (S Müll.).
Anas scutulata, Sal. Muller, Verh. Land.-en Volkenk. p. 159 (1839-44).
- 117 **Nettopus coromandelianus** (Gm.).
Anas coromandeliana, Gmelin, Syst. Nat. i, p. 522 (1788).
- 118 **Dendrocygna javanica** (Horsf.).
Anas javanica, Horsfield, Trans. Linn. Soc. xiii, p. 199 (1821).
- 119 **Anas superciliosa**, Gm.
Anas superciliosa, Gmelin, Syst. Nat. i, p. 537 (1788).
- 120 **Querquedula querquedula** (Linn.).
Anas querquedula, Linnaeus, Syst. Nat. i, p. 203 (1766).

FAMILY PLUTIDAE.

- 121 **Plotus melanogaster** (Gm.).
Plotus melanogaster, Gmelin, Syst. Nat. i, pt. ii, p. 580 (1788).

FAMILY PHALACROCORACIDAE.

- 122 **Phalacrocorax carbo** (Linn.).
Pelecanus carbo, Linnaeus, Syst. Nat. i, p. 216 (1766).

FAMILY FREGATIDAE.

- 123 **Fregata aquila** (Linn.).
Pelicanus aquilus, Linnaeus, Syst. Nat. i, p. 216 (1766).
- 124 **Fregata ariel** (Gould).
Attagen ariel, Gould in G. R. Gray's Genera Birds, iii, p. 669 (1845).

FAMILY PHAETHONTIDAE.

- 125 **Phaethon indicus**, Hume.
Phaethon indicus, Hume, Stray Feath. iv, p. 481 (1876).

FAMILY SULIDAE.

- 126 **Sula piscator** (Linn.) 127 **Sula sula** (Linn.).
Pelecanus piscator, Linnaeus, Syst. Nat. i, p. 217 (1766). *Pelecanus sula*, Linnaeus, Syst. Nat. i, p. 218 (1766).

FAMILY PELECANIDAE.

- 128 **Pelecanus roseus** (Gm.). 129 **Pelecanus philippensis**, Gm.
Pelecanus roseus, Gmelin, Syst. Nat. i, pt. ii, p. 570 (1788). *Pelecanus philippensis*, Gmelin, Syst. Nat. i, pt. ii, p. 571 (1788).

FAMILY FALCONIDAE.

- 130 **Lophospizias trivirgatus** (Temm.). 139 **Elanus hypoleucus**, Gould.
Falco trivirgatus, Temminck Pl. Col. pl. 303 (1824). *Elanus hypoleucus*, Gould, P. Z. S. 1859, p. 127.
- 131 **Astur soloensis** (Horsf.). 140 **Machæramphus alcinus**, Western.
Falco soloensis, Horsfield, Trans. Linn. Soc. xiii, p. 137 (1821). *Machæramphus alcinus*, Western, Arch. Bijl. T. D. Dierk, i, p. 30, pl. (1848).
- 132 **Accipiter virgatus** subsp. **gularis** (Temm. and Schleg.). 141 **Pernis cristatus** (Cuv.).
Astur gularis, Temminck and Schlegel, Faun. Japon, Aves, p. 5, pl. 2 (845-50). *Buteo cristatus*, Cuv.; Vieill. Tabl. Enc. Meth. Orn. p. 1225 (1823).
- 133 **Accipiter virgatus** subsp. **virgatus** (Temm.). 142 **Pernis tweeddalii**, Hume.
Falco virgatus, Reinwardt: Temminck, Pl. Col. pl. 109 (1824). *Pernis tweeddalii*, Hume, Stray Feath. ix, p. 446; pp. 122, 573, pl. (1880).
- 134 **Lophotriorchis kieneri** (De Sparre) 143 **Baza jerdoni** (Blyth).
Astur kienerii, De Sparre: Geoffr. St. Hil., Mag. de Zool. Aves, pl. 35 (1835). *Lophastur jerdoni*, Blyth, Journ. Asiat. Soc. Bengal, xi, p. 464 (1842).
- 135 **Ictinæetus malayensis** (Reinw.). 144 **Microhierax fringillarius** (Drap.).
Falco malayensis, Reinwardt: Temminck, Pl. Col. pl. 117 (1824). *Falco fringillarius*, Drapiez, Dict. Class. d'Hist. Nat. vi, p. 412, pl. v (1824).
- 136 **Spilornis bacha** subsp. **pallidus**, Walden. 145 **Falco peregrinus** subsp. **calidus**, Lath.
Spilornis pallidus, Walden, Ibis, 1872, p. 363. *Falco calidus*, Latham, Ind. Orn. i, p. 41 (1790).
- 137 **Haliaetus leucogaster** (Gm.). 146 **Falco severus**, Horsf.
Falco leucogaster, Gmelin, Syst. Nat. i, p. 257 (1788). *Falco severus*, Horsfield, Trans. Linn. Soc. xiii, p. 135 (1821).
- 138 **Haliastur indus** subsp. **intermedius**, Gurney. 147 **Spizaetus limnaetus** (Horsf.).
Haliastur intermedius, Gurney, Ibis, 1865, p. 28. *Falco limnaetus*, Horsfield, Trans. Linn. Soc. xiii, p. 138. (1821).

FAMILY PANDIONIDAE.

- 148 **Pandion haliaetus** (Linn.). 150 **Polioaetus humilis** (Muller and Schlegl).
Falco haliaetus, Linnaeus, Syst. Nat. i, p. 129 (1766). *Falco humilis*, Muller and Schlegel, Verhandl. Aves, p. 47, pl. 6 (1839-44).
- 149 **Polioaetus ichthyaetus** (Horsf.).
Falco ichthyaetus, Horsfield, Trans. Linn. Soc. xiii, p. 136 (1821).

ORDER STRIGIFORMES.

- 151 **Ketupa ketupa** (Horsf.).
Strix ketupa, Horsfield, Trans. Linn. Soc. xiii, p. 141 (1821).
- 152 **Huhua orientalis** subsp. **sumatrana** (Raffles).
Strix sumatrana, Raffles, Trans. Linn. Soc. xiii, p. 279 (1822).
- 153 **Pisorhina lempiji** (Horsf.).
Strix lempiji, Horsfield, Trans. Linn. Soc. xiii, p. 140 (1821).
- 154 **Pisorhina solokensis**, Hartert.
Pisorhina solokensis, Hartert, Bull. Brit. Orn. Club ii, p. xxxix (1893).
- 155 **Pisorhina rufescens** (Horsf.).
Strix rufescens, Horsfield, Trans. Linn. Soc. xiii, p. 140 (1821).
- 156 **Pisorhina luciae** (Sharpe).
Pisorhina luciae, Sharpe, Ibis 1888, p. 478.
- 157 **Pisorhina vandewateri**, Robinson & Kloss.
antea, p. 127.
- 158 **Ninox scutulata** subsp. **scutulata** (Raffles).
Strix scutulata, Raffles, Trans. Linn. Soc. xiii, p. 280 (1822).
- 159 **Ninox scutulata** subsp. **malaccensis** (Eyton).
Athene malaccensis, Eyton, Ann. & Mag. Nat. Hist. xvi, p. 228 (1845).
- 160 **Syrnium sinense** subsp. **myrtha** (Bp.).
Syrnium myrtha, Bonaparte, Consp. Av. i, p. 44 (1850).
- 161 **Glaucidium sylvaticum** (Bp.).
Athene sylvatica, Bonaparte, Consp. Av. p. 40 (1850).
- 162 **Photodilus badius** (Horsf.).
Strix badius, Horsfield, Zool. Res. Java, pl. 37 (1824).
- 163 **Strix flammea** subsp. **javanica** (Gm.).
Strix javanica, Gmelin, Syst. Nat. i, p. 295 (1788).

ORDER PSITTACIFORMES.

- 164 **Palaeornis longicauda** (Bodd.).
Psittacus longicauda, Boddaert, Tabl. Pl. Enl. p. 53 (1783).
- 165 **Psittinus malaccensis** (Lath.).
Psittacus malaccensis, Latham, Ind. Orn. p. 130 (1790).
- 166 **Loriculus galgulus** (Linn.).
Psittacus galgulus, Linnaeus, Amoen. Acad. iv, p. 236 (1754).

ORDER CORACIIFORMES.

FAMILY PODARGIDAE.

- 167 **Batrachostomus auritus**, J. E. Gray.
Podargus auritus, Gray in Griffith ed. Cuv. Anim. Kingd. ii, p. 114 (1820).
- 168 **Batrachostomus poliophus**, Hartert.
Batrachostomus poliophus, Hartert, Notes Leyden Mus. p. 63 (1892).
- 169 **Batrachostomus stellatus** (Gould).
Podargus stellatus, Gould, P. Z. S. 1837, p. 43.
- 170 **Batrachostomus javensis** (Horsf.).
Podargus javensis, Horsf. Trans. Linn. Soc. xiii, p. 141 (1821).
- 171 **Batrachostomus affinis**, Blyth.
Batrachostomus affinis, Blyth, Journ. Asiat. Soc. Bengal, p. 1180 (1847).

FAMILY CORACIIDAE.

- 172 **Eurystomus orientalis** (Linn.).
Coracias orientalis, Linnaeus, Syst. Nat. i, p. 159 (1766).
- 173 **Eurystomus orientalis** subsp. **calonyx**, Hodgs.
Eurystomus calonyx, Hodgs.; Sharpe, P. Z. S. 1890, p. 551.

FAMILY ALCEDINIDAE.

- 174 **Ramphalcyon capensis** subsp. **capensis** (Linn.).
Alcedo capensis, Linnaeus, Syst. Nat. i, p. 180 (1766).
- 175 **Ramphalcyon capensis** subsp. **cyanopteryx**, Oberholser.
Ramphalcyon capensis cyanopteryx, Oberholser, Proc. U. S. Nat. Mus. xxxv, p. 676 (1909).
- 176 **Alcedo ispida** subsp. **bengalensis**, Gm.
Alcedo bengalensis, Gmelin, Syst. Nat. i, p. 450 (1788).
- 177 **Alcedo euryzona**, Temm.
Alcedo euryzona, Temminck, Pl. Col. text in livr. 86 (1830).
- 178 **Alcedo meninting**, Horsf.
Alcedo meninting, Horsfield, Trans. Linn. Soc. xiii, p. 172 (1821).
- 179 **Ceyx euerythra**, Sharpe.
Ceyx euerythra, Sharpe, Cat. Birds Brit. Mus. xvii, p. 179 (1892).
- 180 **Ceyx enopopygius**, Oberholser.
Ceyx enopopygius, Smithsonian Misc. Coll. 60, No. 7, p. 7 (1912).
- 181 **Halcyon coromandus** subsp. **neophora** (Oberholser).
Entomophora coromanda neophora, Oberholser, Proc. U. S. Nat. Mus. 48, p. 646 (1915).
- 182 **Halcyon pileata** (Bodd.).
Alcedo pileata, Boddart, Tabl. Pl. Enl. p. 41 (1782).
- 183 **Halcyon sancta**, Vig. and Horsf.
Halcyon sanctus, Vigors & Horsfield, Trans. Linn. Soc. xv, p. 206 (1826).
- 184 **Halcyon chloris** (Bodd.).
Alcedo chloris, Boddart, Tabl. Pl. Enl. p. 49 (1783).
- 185 **Halcyon concreta** (Temm.).
Dacelo concreta, Temminck, Pl. Col. iv, pl. 346 (1825).
- 186 **Carcineutes pulchellus** (Horsf.).
Dacelo pulchella, Horsfield, Trans. Linn. Soc. xiii, p. 175 (1821).

FAMILY BUCEROTIDAE.

- 187 **Buceros rhinoceros**, Linn.
Buceros rhinoceros, Linnaeus, Syst. Nat. i, p. 153 (1766).
- 188 **Buceros silvestris** (Vieill.).
Buceros silvestris, Vieillot, Nouv. Dict. d'Hist. Nat. iv, p. 592 (1816).
- 189 **Dichoceros bicornis** (Linn.).
Buceros bicornis, Linnaeus, Syst. Nat. i, p. 153 (1766).
- 190 **Anthracoceros convexus** (Temm.).
Buceros convexus, Temminck, Pl. Col. ii, p. 82, pl. 530 (1832).
- 191 **Anthracoceros malayanus** (Raffl.).
Buceros malayanus, Raffles, Trans. Linn. Soc. xiii, p. 292 (1822).
- 192 **Cranorrhinus corrugatus** (Temm.).
Buceros corrugatus, Temminck, Pl. Col. ii, p. 85, pl. 531 (1832).
- 193 **Rhytidoceros undulatus** (Shaw).
Buceros undulatus, Shaw, Gen. Zool. viii, p. 26 (1811).
- 194 **Rhytidoceros subruficollis** (Blyth).
Buceros subruficollis, Blyth, Journ. Asiat. Soc. Bengal, xii, p. 177 (1843).
- 195 **Anorrhinus galeritus** (Temm.).
Buceros galeritus, Temminck, Pl. Col. ii, p. 78, pl. 520 (1832).
- 196 **Rhinoplax vigil** (Forst.).
Buceros vigil, Forster, Ind. Zool. p. 40 (1781).
- 197 **Berenicornis comatus** (Raffles).
Buceros comatus, Raffles, Trans. Linn. Soc. xiii, p. 399 (1822).

FAMILY MEROPIDAE.

- 198 **Melittophagus swinhoii** (Hume).
Merops swinhoii, Hume, Nests and Eggs Ind. B. p. 102 (1873).
- 199 **Merops sumatranus**, Raffles.
Merops sumatranus, Raffles, Trans. Linn. Soc. xiii, p. 294 (1822).

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- 200 **Merops philippinus**, Linn.
Merops philippinus, Linnaeus, Syst
Nat. (13th ed.) i, p. 183 (1787).
- 201 **Nyctiornis amicta** (Temm.).
Merops amictus, Temminck, Pl. Col.
iv, pl. 310 (1824).

FAMILY CAPRIMULGIDAE.

- 202 **Caprimulgus macrurus** subsp.
bimaculatus, Peale.
Caprimulgus bimaculatus, Peale, U. S.
Exploring Expedn., 8, Mamm. and
Ornith., p. 170 (1848).
- 203 **Caprimulgus affinis**, Horsf.
Caprimulgus affinis, Horsfield, Trans
Linn. Soc. xiii, p. 142 (1821).
- 204 **Caprimulgus indicus** subsp.
jotaka, Temm. and Schleg
Caprimulgus jotaka, Temminck and
Schlegel, Faun. Japon, Aves, p. 37
pl. 12 (1847).
- 205 **Caprimulgus pulchellus**,
Salvad.
Caprimulgus pulchellus, Salvad. Ann.
Mus. Civ. Gen. xiv, p. 195 (1879).
- 206 **Caprimulgus mirificus**,
Oberholser
Caprimulgus mirificus, Oberholser,
Smithsonian Misc. Coll., 60, No. 7
p. 7 (1912).
- 207 **Lyncornis temminckii**, Gould
Lyncornis temminckii, Gould, Icon. Av.
pt. 2 (1838).

FAMILY APIDAE.

- 208 **Apus pacificus** (Lath.).
Hirundo pacifica, Lath. Ind. Orn
Suppl. p. 58 (1801).
- 209 **Apus subfurcatus** (Blyth).
Cypselus subfurcatus, Blyth, Journ.
Asiat. Soc. Bengal xviii, p. 807
(1849).
- 210 **Tachornis battassiensis**, subsp.
infumata (Sclat.).
Cypselus infumatus, Sclater, P. Z. S.
1865, p. 602.
- 211 **Chætura giganteus** (Temm.).
Cypselus giganteus, Temminck, Pl. Col.
364 (1825).
- 212 **Chætura cochinchinensis**,
Oust
Chaetura cochinchinensis, Oustalet, Bull.
Soc. Philom. p. 52 (1878).
- 213 **Chætura leucopygialis** (Blyth.).
Acanthylis leucopygialis, Blyth, Journ.
Asiat. Soc. Bengal, xviii, p. 809
(1849).
- 214 **Collocalia fuciphaga** subsp.
fuciphaga (Thunb.).
Hirundo fuciphaga, Thunberg, Act.
Holm. xxxiii, p. 151, pl. 4 (1772).
- 215 **Collocalia vestita** subsp. **vestita** (Less.).
Salangana vestita, Lesson, l'Echo du
Monde Savant, (2) viii, p. 134
(1843).
- 216 **Collocalia linchi** subsp. **linchi**,
Horsf. and Moore.
Collocalia linchi, Horsfield and Moore,
Cat. Birds Mus. East. Ind. Comp
i, p. 100 (1854).
- 217 **Hemiprocne longipennis** subsp.
harterti, Streseman.
Hemiprocne longipennis harterti, Strese-
mann, Nov. Zool. xx, p. 339 (1913)
Bull. Soc. Philomath. ii, p. 153
(1804).
- 218 **Hemiprocne comata** (Temm.).
Cypselus comatus, Temminck, Pl. Col.
268 (1824).

ORDER TROGONES.

- 219 **Pyrotrogon diardii** subsp.
neglectus, Forbes and Robinson.
Pyrotrogon neglectus, Forbes and
Robinson, Bull. Liverpool. Mus. ii,
p. 34 (1899).
- 220 **Pyrotrogon kasumba** (Raffl.).
Trogon kasumba, Raffles, Trans. Linn.
Soc. xiii, p. 282 (1822).
- 221 **Pyrotrogon erythrocephalus**
subsp. **flagrans**, (Müll.).
Trogon flagrans, Sal. Müller, Tijd
Nat. Ges. p. 338, pl. viii, fig. 2
(1835).
- 222 **Pyrotrogon duvaucelii**
(Temm.).
Trogon duvaucelii, Temminck, Pl. Col.
291 (1837).

- 223 **Pyrotrogon oreskios** (Temm.).
Trogon oreskios, Temminck, Pl. Col.
181 (1823).
- 224 **Hapalarpactes mackloti**
(S. Müll.).
Trogon mackloti, Sal. Muller, Tijd.
Nat. Gesch. p. 336, pl. iv, fig. 1
(1835).
- 225 **Pyrotrogon vidua** (O. Grant).
Cat. Birds Brit. Mus. xvii, p. 501
(1892), cf Beaufort Ornith. Monatsb.
xvi, p. 190 (1908).

ORDER COCCYGES.

- 226 **Coccytes coromandus** (Linn.).
Cuculus coromandus, Linnaeus, Syst.
Nat. i, p. 171 (1766).
- 227 **Surniculus lugubris** (Horsf.).
Cuculus lugubris, Horsfield, Trans.
Linn. Soc. xiii, p. 179 (1821).
- 228 **Hierococcyx bocki** (Wardl.-
Rams.).
Hierococcyx bocki, Wardlaw Ramsay,
Ibis, 1886, pp. 157-159.
- 229 **Hierococcyx fugax** (Horsf.).
Cuculus fugax, Horsfield, Trans. Linn.
Soc. xiii, p. 178 (1821).
- 230 **Hierococcyx fugax** subsp.
nisicolor (Hodgs.).
Cuculus nisicolor, Hodgs.; Blyth,
Journ. Asiat. Soc. Bengal, xii, p.
943 (1843).
- 231 **Cuculus micropterus**, Gould.
Cuculus micropterus, Gould, P. Z. S.
1837, p. 137.
- 232 **Cuculus canorus**, Linn.
Cuculus canorus, Linnaeus, Syst. Nat.
i, p. 168 (1766).
- 233 **Cuculus saturatus**, Hodgs.
Cuculus saturatus, Hodgs. Blyth.
Journ. Asiat. Soc. Bengal, xii, p.
942 (1843).
- 234 **Cuculus intermedius**, subsp.
insulinde, Hartert.
Cuculus intermedius insulinde, Hartert,
Vog. Palaarkt, Faun. Heft, vii,
p. 952 (1912).
- 235 **Cacomantis merulinus** subsp.
merulinus (Scop.).
Cuculus merulinus, Scopeli, Del. Flor.
et Faun. Insubr. ii, p. 89 (1786).
- 236 **Cacomantis sepulchralis** subsp.
sepulchralis (S. Mull.).
Cuculus sepulchralis, S. Muller, Verh.
Nat. Gesch. Land en Volkenk.
p. 177 note (1839-44).
- 237 **Penthoceryx sonnerati** subsp.
pravata (Horsf.).
Cuculus pravata, Horsfield, Trans. Linn.
Soc. xiii, p. 179 (1821).
- 238 **Chalcococcyx xanthorhynchus** (Horsf.).
Cuculus xanthorhynchus, Horsfield,
Trans. Linn. Soc. xiii, p. 179
(1821).
- 239 **Chalcococcyx maculatus** (Gm.).
Trogon maculatus, Gmelin, Syst. Nat.
i, p. 404 (1788).
- 240 **Chalcococcyx basalis** (Horsf.).
Cuculus basalis, Horsfield, Trans. Linn.
Soc. xiii, p. 179 (1821).
- 241 **Eudynamis honorata** subsp.
malayana, Cab. and Heine.
Eudynamis malayana, Cab. and Heine,
Mus. Hein. iv, p. 52 (1862).
- 242 **Centropus bengalensis** subsp.
javanensis (Dumont).
Cuculus javanensis, Dumont, Dict. Sci.
Nat. xi, p. 144 (1818).
- 243 **Centropus rectunguis**, Strickl.
Centropus rectunguis, Strickland P. Z.
S. 1846, p. 104.
- 244 **Centropus sinensis** subsp.
bubutus, (Horsf.).
Centropus bubutus, Horsfield, Trans.
Linn. Soc. xiii, p. 180 (1821).
- 245 **Zanclostomus javanicus**
(Horsf.).
Phoenicophaps javanicus, Horsfield,
Trans. Linn. Soc. xiii, p. 178 (1821).
- 246 **Rhopodytes tristis** subsp.
elongatus (S. Mull.).
Phoenicophaps elongatus, Sal. Muller,
Tijd. Nat. Gesch. p. 342, pl. 9, fig. 1
(1835).
- 247 **Rhopodytes diardi** (Less.).
Melias diardi, Lesson, Traité, p. 132
(1831).
- 248 **Rhopodytes sumatranus**
(Raffl.).
Cuculus sumatranus, Raffles, Trans.
Linn. Soc. xiii, p. 287 (1822).
- 249 **Rhinortha chlorophæa** (Raffl.).
Cuculus chlorophæus, Raffles, Trans.
Linn. Soc. xiii, p. 288 (1822).

- 250 **Urococcyx erythrognaethus** (Hartl.).
Phaenococcyx erythrognaethus, Hartlaub, Verz. Mus. Brem. p. 95 (1844)
- 251 **Carpococcyx viridis**, Salvad.
Carpococcyx viridis, Salvad. Ann. Mus. Civ. Gen. xiv, p. 187 (1879)

FAMILY CAPITONIDAE.

- 252 **Calorhamphus hayi** (J. E. Gray)
Bucco hayi, J. E. Gray, Zool. Misc. p. 33 (1832).
- 253 **Chotorhea chrysopogon** (Temm.).
Bucco chrysopogon, Temminck, Pl. Col. iii, p. 285 (1824)
- 254 **Chotorhea versicolor** (Raffl.).
Bucco versicolor, Raffles Trans. Linn. Soc. xiii, p. 284 (1824).
- 255 **Chotorhea mystacophanes** (Temm.).
Bucco mystacophanes, Temminck, Pl. Col. iii, p. 315 (1824).
- 256 **Cyanops henricii** (Temm.).
Bucco henricii, Temminck, Pl. Col. iii, pl. 524 (1831).
- 257 **Cyanops oorti** (S. Mull.).
Bucco oorti Sal Muller, Nat. Gesch. en Phys. ii, p. 341, pl. 8, fig. 4 (1835).
- 258 **Mesobucco duvauceli** (Less.).
Bucco duvauceli, Lesson, Traité, p. 164 (1831).
- 259 **Xantholaema haemacephala** (P. L. S. Mull.).
Bucco haemacephalus, P. L. S. Muller, Syst. Nat. Anhang, p. 88 (1776)
- 260 **Xantholaema rosea** (Dumont)
Bucco roseus, Dumont, Dict. Sci. Nat. iv, p. 52 (1806).
- 261 **Psilopogon pyrolophus**, S. Mull.
Psilopogon pyrolophus, S. Muller, Tijd. Nat. Gesch. en Phys. ii, p. 339 (1835).

FAMILY PICIDAE.

- 262 **Gecinus dedemi**, Van Oort.
Gecinus dedemi, Van Oort, Notes Leiden Mus. xxxiv, p. 59 (1911).
- 263 **Gecinus vittatus** (Vieill.).
Picus vittatus, Vieillot, Nouv. Dict. d'Hist. Nat. xxvi, p. 91 (1818).
- 264 **Gecinus puniceus** subsp. **observandus**, Hartert.
Gecinus puniceus observandus, Hartert, Nov. Zool. iii, p. 542 (1896).
- 265 **Chrysophlegma malaccense** (Lath.).
Picus malaccensis, Latham, Ind. Orn. 1, p. 241 (1790).
- 266 **Chrysophlegma humii**, Harg.
Chrysophlegma humii, Hargitt, Ibis, 1889, p. 231.
- 267 **Chrysophlegma mystacale**, Salvad.
Chrysophlegma mystacalis, Salvadori, Ann. Mus. Civ. Gen. xiv, p. 182 (1879).
- 268 **Gauropicoides rafflesii** (Vig.).
Picus rafflesii, Vigors, Mem. Raffles. App. p. 669 (1831).
- 269 **Dendrocopus analis** (Horsf.).
Picus analis, Horsfield, Zool. Res. Java (1824).
- 270 **Iyngipicus auritus** (Eyton).
Tripsurus auritus, Eyton, Ann. and Mag. Nat. Hist. xvi, p. 229 (1845).
- 271 **Pyrrhopicus porphyromelas** (Boie).
Picus porphyromelas, Boie, Briefe geschr. aus Ostind. p. 143 (1832).
- 272 **Miglyptes grammithorax** (Malh.).
Phaiopicus grammithorax, Malherbe, Picidae, ii, p. 12, pl. xlviii, figs. 4, 5 (1862).
- 273 **Miglyptes tukki** (Less.).
Picus tukki, Lesson, Rev. Zool. 1839, p. 167.
- 274 **Micropternus brachyurus** subsp. **badius** (Raffles).
Picus badius, Raffles, Trans. Linn. Soc. xiii, p. 289 (1822).
- 275 **Tiga javanensis** (Ljung).
Picus javanensis, Ljung, Mem. Acad. Roy. Stockh. 1797, p. 134, pl. vi.
- 276 **Chrysocolaptes validus** subsp. **xanthopygius**, Finsch.
Chrysocolaptes xanthopygius, Finsch, Notes Leyden Mus. xxvi, p. 34 (1905).

- 277 **Hemicercus concretus** subsp. **cocometopus** (Reichenb.)
Hemicercus cocometopus, Reichenbach, Scans. Picinae, p. 401, pl. DCLVI, figs 4364-5 (1854).
- 278 **Thriponax javensis** (Horsf.)
Picus javensis, Horsfield, Trans. Linn. Soc. xiii, p. 175 (1821).
- 279 **Alophonerpes pulverulentus** (Temm.)
Picus pulverulentus, Temminck, Pl. Col. 389 (1826).
- 280 **Sasia abnormis** (Temm.)
Picumnus abnormis, Temminck, Pl. Col. iv, pl. 371, fig. 3 (1825).
- 281 **Picumnus innominatus** subsp. **malayorum**, Hartert.
Picumnus innominatus malayorum, Hartert, Vog. Palaarkt. Faun. Heft VII, p. 937 (1912).

ORDER EURYLAEMIFORMES.

- 282 **Calyptomena viridis**, Raffles.
Calyptomena viridis, Raffles, Trans. Linn. Soc. xiii, p. 295 (1822).
- 283 **Psarisomus dalhousiæ** subsp. **psittacinus** (S. Mull.).
Eurylaimus psittacinus, Sal. Muller Tijd. Nat. Gesch. ii, p. 349, pl. V, fig. 6 (1835).
- 284 **Serilophus lunatus** subsp. **intensus**, Rob. and Kloss.
Antea p 150
- 285 **Eurylæmus javanicus** subsp. **harterti**, Van Oort.
Eurylaimus javanicus harterti, Van Oort, Notes Leyden Mus. xxxi, p. 209 (1909).
- 286 **Eurylæmus ochromelas**, Raffles.
Eurylaimus ochromelas, Raffles, Trans. Linn. Soc. xiii, p. 297 (1822).
- 287 **Corydon sumatranus** (Raffl.).
Coracias sumatranus, Raffles, Trans. Linn. Soc. xiii, p. 303 (1822).
- 288 **Cymborhynchus macrorhynchus** subsp. **lemniscatus** (Raffles.).
Eurylaimus lemniscatus, Raffles, Trans. Linn. Soc. xiii, p. 296 (1822).

FAMILY PITTIDÆ.

- 289 **Pitta cærulea** (Raffles.).
Myiothera caerulea, Raffles, Trans. Linn. Soc. xiii, p. 301 (1822).
- 290 **Pitta schneideri**, Hartert.
Pitta schneideri, Hartert, Bull. Brit. Orn. Club, xxv, pp. 9, 10 (1909).
- 291 **Pitta cyanoptera**, Temm.
Pitta cyanoptera, Temminck, Pl. Col. 218 (1823).
- 292 **Pitta venusta**, S. Mull.
Pitta venusta Sal. Muller, Tijd. Verh. Nat. Gesch. ii, p. 348, pl. 9, fig. 4 (1835).
- 293 **Pitta muelleri** (Bp.).
Brachyurus muelleri, Bonaparte, Consp. Av. i, p. 256 (1850).
- 294 **Pitta cucullata**, Hartl.
Pitta cucullata, Hartlaub, Rev. Zool. p. 65 (1843).
- 295 **Euciohla boschi**, Mull. and Schleg.
Pitta boschi, Muller and Schlegel, Verh. Zool. Pitta, p. 5, i (1835).

FAMILY HIRUNDINIDÆ.

- 296 **Hirundo rustica** subsp. **gutturalis** (Scop.).
Hirundo gutturalis, Scopeli, Del. Flor. et Faun. Insubr. ii, p. 96 (1786).
- 297 **Hirundo javanica**, Sparrman.
Hirundo javanica, Sparrman, Mus. Carls. ii, pl. 100 (1789).

FAMILY MUSCICAPIDAE.

- 298 **Hemichelidon ferruginea**, Hodgs.
Hemichelidon ferruginea, Hodgs. P. Z. S. 1845, p. 32.
- 299 **Alseonax latirostris** (Raffl.)
Muscicapa latirostris, Raffles, Trans. Linn. Soc. xiii, p. 312 (1822).
- 300 **Cyornis concreta** (S. Mull.).
Muscicapa concreta, Sal. Muller, Tijds. Nat. Gesch. and Phys. ii, p. 351 (1835).
- 301 **Cyornis unicolor** subsp. **infus-cata**, Hartert.
Cyornis unicolor infuscata, Hartert. Nov. Zool. ix, p. 550 (1902).
- 302 **Cyornis cantatrix** (Temm.).
Muscicapa cantatrix, Temminck, Pl. Col. III, 226.
- 303 **Cyornis rufigaster** (Raffl.).
Muscicapa rufigaster, Raffles, Trans. Linn. Soc. xiii, p. 312 (1822).
- 304 **Nitidula hodgsoni** (Moore).
Nemura hodgsoni, Moore, P. Z. S. 1854, p. 76, pl. 62.
- 305 **Anthipes solitaria** (Müll.).
Erythrosteria solitaria, Sal. Müller, Tijds. Nat. Gesch. p. 351 (1835).
- 306 **Niltava sumatrana**, Salvad.
Niltava sumatrana, Salvadori, Ann. Mus. Civ. Gen. xiv, p. 201 (1879).
- 307 **Niltava grandis** subsp. **decipiens** (Salvad.).
Niltava decipiens, Salvadori, Ann. Mus. Civ. Gen. (2) xii, p. 49 (1891).
- 308 **Muscitrea grisola** (Blyth).
Tephrodornis grisola, Blyth, Journ. Asiat. Soc. Bengal, xii, p. 180 (1843).
- 309 **Erythromyias muelleri** (Temm.).
Muscicapa muelleri, Temminck, MS.; Blyth, Ibis, 1870, p. 166.
- 310 **Poliomyias mugimaki** (Temm.).
Muscicapa mugimaki, Temminck, Pl. Col., 577, fig. 2 (1835).
- 311 **Dendrobiastes hyperythra** subsp. **malayana** (Ogilvie Grant).
Muscicapula malayana, Ogilvie Grant, Bull. Brit. Orn. Club, xix, p. 10 (1906).
- 312 **Muscicapula melanoleuca** subsp. **westermanni**, Sharpe.
Muscicapula westermanni, Sharpe, P. Z. S. 1888, p. 270.
- 313 **Gerygone modiglianii**, subsp. **modiglianii**, Salvad.
Gerygone Modiglianii, Salvadori, Ann. Mus. Civ. Gen. (2) xii, p. 52 (1891).
- 314 **Cyanoptila bella** (A. Hay).
Muscicapa bella, A. Hay, Madras Journ. xiii, pt. 2, p. 162 (1845).
- 315 **Hypothymis azurea** subsp. **prophata**, Oberhser.
Hypothymis azurea prophata, Oberholser, Proc. U. S. Nat. Mus. 39, p. 597 (1911).
- 316 **Rhipidura albicollis** subsp. **atrata**, Salvad.
Rhipidura atrata, Salvadori, Ann. Mus. Civ. Gen. xiv, p. 203 (1879).
- 317 **Rhipidura perlata**, S. Mull.
Rhipidura perlata, Sal. Muller, Nat. Gesch. Land-en Volken, p. 185 (1835).
- 318 **Rhipidura euryura**, Sal. Müller.
Nat. Gesch., Land-en Volken, p. 185 (note) 1835.
- 319 **Rhipidura javanica** (Sparm.).
Muscicapa javanica, Sparrman, Mus. Carls. iii, pl. 75 (1789).
- 320 **Terpsiphone paradisi** subsp. **affinis** (Blyth).
Tchitrea affinis, A. Hay, MS., Blyth, Journ. Asiat. Soc. Bengal, xv, p. 292 (1846).
- 321 **Terpsiphone incii** (Gould).
Muscipeta incii, Gould, B. Asia, part 4.
- 322 **Philentoma velatum** (Temm.).
Drymophila velata, Temminck, Pl. Col. 334.
- 323 **Philentoma pyrrhopterum** (Temm.).
Muscicapa pyrrhoptera, Temminck, Pl. Col. 596, fig. 2.
- 324 **Rhinomyias pectoralis** (Salvad.).
Alcippe pectoralis, Salvad. Atti R. Acad. Torin. ii, p. 530.
- 325 **Rhinomyias olivacea**, subsp. **brunneicauda** (Salvad.).
Hyloterpe brunneicauda, Salvadori, Ann. Mus. Civ. Gen. xiv, p. 210 (1879).
- 326 **Culicicapa ceylonensis** (Swains.).
Platyrrhynchus ceylonensis (Swains.) Zool. Illustr. i, pl. 13 (1838).

- 327 **Abornis superciliaris** subsp. **schwaneri** (Temm.).
Abornis schwaneri (Temm.): Blyth, Ibis 1870, p. 169.
- 328 **Cryptolopha trivirgata** subsp. **trivirgata** (Strickl.).
Phylloscopus trivirgatus, Strickland, Contrib. Ornith. 1840, p. 123, pl. 34.
- 329 **Cryptolopha sumatrensis**, Rob. and Kloss
Cryptolopha sumatrensis, Robinson and Kloss, antea p. 165.
- 330 **Cryptolopha muelleri**, Robinson and Kloss.
Cryptolopha muelleri, Robinson and Kloss, antea, p. 167.
- 331 **Cryptolopha montis**, Sharpe.
Cryptolopha montis, Sharpe, Ibis, 1887, p. 442.
- 332 **Stoparola indigo** subsp. **ruficrissa**, Salvad.
Stoparola ruficrissa, Salvadori, Ann. Mus. Civ. Gen. xiv, p. 202 (1879).
- 333 **Stoparola melanops** subsp. **thalassinoides** (Cab.).
Glaucomyias thalassoides, Cabanis, Mus. Hein. Th. 1, p. 53, note (1857).

FAMILY CAMPOPHAGIDAE.

- 334 **Artamides sumatrensis** (S. Mull.).
Cebilepyris sumatrensis, Sal. Muller, Verh. Nat. Gesch. Land- und Volkenk. p. 190 (1835).
- 335 **Artamides melanocephalus** (Salvad.).
Graucalus melanocephalus, Salvadori, Ann. Mus. Civ. Gen. xiv, p. 206 (1879).
- 336 **Lalage fimbriata** subsp. **culminata** (A. Hay).
Cebilepyris culminatus, A. Hay, Madras Journ. xiii, p. 157 (1846).
- 337 **Lalage terat** (Bodd.).
Turdus terat, Boddaert, Tabl. Pl. Enl. pl. 17 (1783).
- 338 **Pericrocotus xanthogaster** (Raffl.).
Lanius xanthogaster, Raffles, Trans. Linn. Soc. xiii, p. 309 (1822).
- 339 **Pericrocotus peregrinus** (Linn.).
Parus peregrinus, Linnaeus, Syst. Nat. i, p. 342 (1766).
- 340 **Pericrocotus montanus**, Salvad.
Pericrocotus montanus, Salvadori, Ann. Mus. Civ. Gen. xiv, p. 205 (1879).
- 341 **Pericrocotus igneus**, Blyth.
Pericrocotus igneus, Blyth, Journ. Asiat. Soc. Bengal, xv, p. 309 (1846).
- 342 **Pericrocotus miniatus** (Temm.).
Muscicapa miniata, Temminck, Pl. Col. 156 (1825).
- 343 **Pericrocotus cinereus**, Lafr.
Pericrocotus cinereus, Lafresnaye, Rev. Zool. viii, p. 94 (1845).

FAMILY PYCNONOTIDAE.

- 344 **Aegithina viridissima** (Bp.).
Iora viridissima, Bonaparte, Consp. Av. i, p. 397 (1859).
- 345 **Aegithina tiphia** subsp. **viridis** (Bp.).
Iora viridis, Bonaparte, Consp. Av. i, p. 397 (1850).
- 346 **Chloropsis viridis** subsp. **zosterops**, Vig.
Chloropsis zosterops, Vigors, App. Mem. Life Raffl. p. 674 (1847).
- 347 **Chloropsis media** (Bp.).
Phyllornis media, Bonaparte, Consp. Av. i, p. 396 (1850).
- 348 **Chloropsis icterocephala** (Temm.).
Verdin icterocephala, Temm. Pl. Col. 512, fig. 2 (1826).
- 349 **Chloropsis cyanopogon** (Temm.).
Phyllornis cyanopogon, Temminck, Pl. Col. 512, fig. 1 (1826).
- 350 **Chloropsis venusta** (Bp.).
Phyllornis venusta, Bonaparte, Consp. Av. i, p. 396 (1850).
- 351 **Irena puella** subsp. **crinigera**, Sharpe.
Irena crinigera, Sharpe, Cat. Birds Brit. Mus. iii, p. 267 (1877).
- 352 **Hemixus cinereus** (Blyth).
Iole cinerea, Blyth, Journ. Asiat. Soc. Bengal, xiv, p. 573 (1845).
- 353 **Hemixus malaccensis** (Blyth).
Hypsipetes malaccensis, Blyth, Journ. Asiat. Soc. Bengal, xiv, p. 574 (1845).

- 354 **Hemixus sumatranus**, Wardl. Rams
Hemixus sumatranus, Wardlaw Ramsay, Ann. and Mag. Nat. Hist. (5), p. 431 (1882).
- 355 **Iole olivacea**, Blyth.
Iole olivacea, Blyth, Journ. Asiat. Soc. Bengal. xiii, p. 386 (1842).
- 356 **Euptilosus euptilosus** (Jard and Selby).
Brachypus euptilosus, Jard. and Selby, Ill. Orn. iv (n. s.) iii, (1825).
- 357 **Microtarsus melanocephalus** (Gm.).
Lanius melanocephalus, Gmelin, Syst. Nat. i, p. 309 (1788).
- 358 **Microtarsus melanoleucus**, Eyton.
Microtarsus melanoleucus, Eyton, P. Z. S. 1839, p. 102.
- 359 **Oriniger sumatranus**, Wardl. Rams.
Criniger sumatranus, Wardlaw Ramsay, Ann. and Mag. Nat. Hist. (5), p. 431 (1882).
- 360 **Alophoixus phaeocephalus** (Hartl.).
Ixos (Trichixos) phaeocephalus, Hartlaub, Rev. Zool. 1844, p. 401.
- 361 **Tricholestes criniger** (Blyth).
Brachypodius (?) criniger, Blyth, Journ. Asiat. Soc. Bengal, xii, p. 577 (1844).
- 362 **Alcurus leucogrammicus** (S. Mull.).
Pycnonotus leucogrammicus, Sal. Muller, Tijds. Nat. Gesch. Nederl. Ind. p. 362 (1835).
- 363 **Trachycomus ochrocephalus** (Gm.).
Turdus ochrocephalus, Gmelin, Syst. Nat. i. 821 (1788).
- 364 **Pycnonotus analis** (Horsf.).
Turdus analis, Horsfield, Trans. Linn. Soc. xiii, p. 147 (1821).
- 365 **Pycnonotus plumosus** Blyth.
Pycnonotus plumosus, Blyth, Journ. Asiat. Soc. Bengal, xiv, p. 567 (1844).
- 366 **Pycnonotus simplex** (Less.).
Pycnonotus simplex, Lesson, Rev. Zool. 11, p. 167 (1839).
- 367 **Pycnonotus brunneus** (Blyth.).
Ixos brunneus, Blyth, Journ. Asiat. Soc. Bengal, xiv, p. 568 (1842).
- 368 **Pycnonotus erythrophthalmos** subsp. **cyanocephalus**, Oberholser.
Pycnonotus erythrophthalmos cyanocephalus, Oberholser, Smithsonian Misc. Coll. Vol. 60, No. 7, p. 10 (1912).
- 369 **Pycnonotus bimaculatus** subsp. **bimaculatus** (Horsf.).
Turdus bimaculatus, Horsfield, Trans. Linn. Soc. xiii, p. 147 (1821).
- 370 **Pycnonotus aurigaster** (Vieill.).
Turdus aurigaster, Vieillot Nouv. Dict. d'Hist. Nat. xx, p. 258 (1819).
- 371 **Gymnocrotaphus tygus** (Bp.).
Brachypus tygus, Bonaparte, Consp. Av. i, p. 262 (1850).
- 372 **Rubigula dispar** (Horsf.).
Turdus dispar, Horsfield, Trans. Linn. Soc. xiii, p. 150 (1821).
- 373 **Rubigula cyaniventris** (Blyth).
Pycnonotus cyaniventris, Blyth, Journ. Asiat. Soc. Bengal, xi, p. 792 (1842).
- 374 **Rubigula squamata** subsp. **webberi** (Hume).
Ixidia webberi, Hume, Stray Feath., viii, pp. 40, 63 (1879).

FAMILY TIMELIIDAE.

- 375 **Eupetes macrocerus** (Temm.).
Eupetes macrocerus, Temminck, Pl. Col. ii, pl. 516 (1831).
- 376 **Pomatorhinus borneensis**, Cab.
Pomatorhinus borneensis, Cab. Mus. Hein. Th. i, p. 84, note (1850).
- 377 **Garrulax bicolor**, Hartl.
Garrulax bicolor, Hartlaub, Rev. Zool. 1844, p. 402.
- 378 **Garrulax palliatus** (Bp.).
Ianthocincla palliata, Bonaparte, Consp. Av. i, p. 371 (1850).
- 379 **Melanocichla lugubris** (S. Mull.).
Ianthocincla lugubris, Sal. Muller, Nat. Tijds. Nederl. Ind. p. 344, pl. 5, fig. 2 (1835).
- 380 **Rhinocichla mitrata** (S. Mull.).
Timalia mitrata, Sal. Muller, Nat. Tijds. Nederl. Ind. p. 345, pl. 5, fig. 3 (1835).
- 381 **Ophrydornis albigularis** (Blyth).
Setaria albigularis, Blyth, Journ. Asiat. Soc. Bengal, xiii, p. 385 (1844).

Part II: Vertebrata.

- 382 **Turdinus sepiarius** (Horsf.)
subsp. **sepiarius** (Horsf.).
Brachypteryx sepiaria, Horsfield,
Trans. Linn. Soc. xiii, p. 544
(1821).
- 383 **Turdinus magnirostris**
(Moore).
Alcippe magnirostris, Moore, P. Z. S.
1854, p. 277.
- 384 **Turdinus rufipectus**, Salvad
Turdinus rufipectus, Salvadori, Ann.
Mus. Civ. Gen. xiv, p. 224 (1879)
- 385 **Turdinus loricatus** (S. Mull.).
Myiothera loricata, Sal. Muller, Nat.
Tijd. Gesch. Nederl. Ind. p. 348
(1835).
- 386 **Erythrochla bicolor** (Less.).
Brachypteryx bicolor, Lesson, Rev
Zool. 1839, p. 138.
- 387 **Drymocapthus nigro-**
capitatus (Eyton).
Brachypteryx nigro-capitata, Eyton,
P. Z. S. 1839, p. 103.
- 388 **Aethostoma rostratum** (Blyth).
Trichostoma rostratum, Blyth, Journ.
Asiat. Soc. Bengal, xi, p. 795
(1842).
- 389 **Aethosoma buttikoferi**
(Vorderm).
Trichostoma buttikoferi Vordermann,
Nat. Tijdschr. Ned. Indie, p. 230
(1892).
- 390 **Setaria magna** (Eyton).
Malacopteron magnum, Eyton, P. Z. S.
1839, p. 103.
- 391 **Setaria cinerea** (Eyton).
Malacopteron cinereus, Eyton, P. Z. S.
1839, p. 103.
- 392 **Setaria rufifrons** (Cab.).
Malacopteron rufifrons, Cabanis, Mus.
Hein. Th. I, p. 65 (1850).
- 393 **Setaria affinis** (Blyth).
Trichostoma affine, Blyth, Journ. Asiat.
Soc. Bengal, xi, p. 795 (1842).
- 394 **Anuropsis malaccensis**
(Hartl.).
Brachypteryx malaccensis, Hartlaub,
Rev. Zool. 1844, p. 402
- 395 **Turdinulus epilepidota**
dilutus, Robinson and Kloss.
Turdinus epilepidota diluta Robinson
and Kloss.
Antea, p. 189.
- 396 **Rimator albostriatus**, Salvad.
Rimator albostriatus, Salvadori, Ann.
Mus. Civ. Gen. xiv, p. 224 (1879).
- 397 **Alcippe cinerea**, Blyth.
Alcippe cinerea, Blyth, Journ. Asiat.
Soc. Bengal, xiii, p. 384 (1844).
- 398 **Stachyris larvata** (Bp.)
Timalia larvata, Bonaparte, Consp.
Av. i. p. 217 (1850).
- 399 **Stachyris poliocephala**
(Temm.).
Timalia poliocephala, Temminck, Pl.
Col. ii, pl. 593, fig. 2 (1836).
- 400 **Stachyris nigricollis** (Temm.).
Timalia nigricollis, Temminck, Pl.
Col. ii, pl. 594, fig. 2 (1836).
- 401 **Stachyris maculata** (Temm.).
Timalia maculata, Temminck, Pl. Col.
pl. 593, fig. 1 (1836).
- 402 **Thringorhina striolata** (S.
Mull.).
Timalia striolata, Sal. Muller, Tijd.
Nat. Gesch. p. 32 (1838).
- 403 **Thringorhina thoracica**
(Temm.).
Pitta thoracica, Temminck, Pl. Col. ii,
pl. 76 (1823).
- 404 **Stachyridopsis chrysaëa**
subsp. **bocagei** (Salvad.).
Stachyris bocagei, Salvadori, Ann. Mus.
Civ. Gen. xiv, p. 223 (1879).
- 405 **Stachyridopsis poliogaster**
(Hume).
Stachyris poliogaster, Hume, Stray
Feath. ix, p. 116 (1880).
- 406 **Cyanoderma erythropterum**
(Blyth).
Timalia erythroptera, Blyth, Journ.
Asiat. Soc. Bengal, xi, p. 794
(1842).
- 407 **Mixornis frigida** (Hartl.).
Zosterops (Meleia) frigida, Sal. Muller,
Ms.; Hartlaub, Journ. fur. Ornith.
1865, p. 27.
- 408 **Mixornis rubricapilla** subsp.
sumatrana, Bp.
Mixornis sumatranus, Bonaparte,
Consp. i, p. 217 (1850).
- 409 **Macronus ptilosus**, Jard. and
Selby.
Macronus ptilosus, Jard. and Selby,
Illustr. Orn. pl. 150 (1835).
- 410 **Myiophoneus flavirostris**
subsp. **dicrorhynchus**, Salvad
Myiophoneus dicrorhynchus, Salvadori,
Ann. Mus. Civ. Gen. xiv, p. 227
(1897).
- 411 **Arrenga castaneus**, (Wardl.
Rams.)
Myiophoneus castaneus, Wardlaw
Ramsay, P. Z. S. 1880, p. 16, pl. 1.

- 412 **Arrenga cyanea** subsp. **melanura**, Salvad.
Arrenga melanura, Salvadori, Ann. Mus. Civ. Gen. xiv, p. 227 (1879).
- 413 **Heteroxenicus saturatus** (Salvad.).
Brachypteryx saturata, Salvadori, Ann. Mus. Civ. Gen. xiv, p. 225 (1879).
- 414 **Heteroxenicus leucophrys** (Temm.).
Myiothera leucophrys, Temminck, Pl. Col. ii, pl. 448, fig. 1 (1827).
- 415 **Sibia picaoides** subsp. **simillima** (Salvad.).
Heterophasia simillima, Salvadori, Ann. Mus. Civ. Gen. xiv, p. 232 (1879).
- 416 **Mesia laurinae** (Salvad.).
Leiothrix laurinae, Salvadori, Ann. Mus. Civ. Gen. xiv, p. 231 (1879).
- 417 **Pterythius aeralatus** subsp. **cameranoi**, Salvad.
Pteruthius cameranoi, Salvadori, Ann. Mus. Civ. Gen. xiv, p. 233 (1879).

FAMILY TROGLODYTIDAE.

- 418 **Pnoepyga lepida**, Salvad.
Pnoepyga lepida, Salvadori, Ann. Mus. Civ. Gen. xiv, p. 227 (1879).

FAMILY TURDIDAE.

- 419 **Cochoa beccarii**, Salvad.
Cochoa beccarii, Salvadori, Ann. Mus. Civ. Gen. xiv, p. 228 (1879).
- 420 **Turdus obscurus** (Gm.).
Turdus obscurus, Gmelin, Syst. Nat. i, p. 816 (1788).
- 421 **Turdus indrapuræ**, Rob. and Kloss.
Antea, p. 210.
- 422 **Geocichla interpres** (Temm.).
Turdus interpres, Temminck, pl. Col. ii, pl. 458 (1828).
- 423 **Zoothera andromedæ** (Temm.).
Myiothera andromedæ, Temminck, Pl. Coll. ii, pl. 392 (1826).
- 424 **Cichloselys sibirica**, subsp. **davisoni** (Hume.).
Turdulus davisoni, Hume, Stray Feath. v, p. 63 (1877).
- 425 **Oreocinclæ aureus** subsp. **horsfieldi** (Bp.).
Oreocinclæ horsfieldi, Bonaparte, Rev. et Mag. Zool. p. 205 (1857).
- 426 **Henicurus ruficapillus**, Temm.
Enicurus ruficapillus, Temminck, Pl. Col. iii, pl. 534 (1832).
- 427 **Henicurus velatus**, Temm.
Enicurus velatus, Temminck, Pl. Col. iii, pl. 160 (1823).
- 428 **Henicurus frontalis**, Blyth.
Enicurus frontalis, Blyth, Journ. Asiat. Soc. Bengal, xvi, p. 156 (1847).
- 429 **Larvivora cyanea** (Pall.).
Motacilla cyanea, Pallas, Reis. Russ. Reichs. iii, p. 697 (1776).
- 430 **Notodela diana** subsp. **sumatrana**. Robinson and Kloss.
Antea, p. 215.
- 431 **Copsychus saularis**, subsp. **musicus** (Raffl.).
Lanius musicus, Raffles, Trans. Linn. Soc. xiii, p. 147 (1822).
- 432 **Kittacinclæ macrurus** subsp. **macrurus** (Gm.).
Turdus macrurus, Gmelin, Syst. Nat. i, p. 820 (1788).

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- 433 **Acrocephalus orientalis** Temm. and Schleg.).
Salicaria turdina orientalis, Temminck and Schlegel, Faun. Japon, Aves, p. 50 (1847).
- 434 **Locustella lanceolata** (Temm.)
Sylvia lanceolata, Temminck, Man d'Orn. iv, p. 614 (1840). *Locustella Certhiola* (Pall.).
- 435 **Sutoria edela** (Temm.).
Orthotomus edela, Temminck, Pl. Col. iii, pl. 599, fig. 2 (1836).
- 436 **Cettia sumatrana**, O. Grant.
Cettia sumatrana, O. Grant, Bull. Brit Orn. Club, xxxvi, p. 66 (1916).
- 437 **Orthotomus atrigularis**, Temm.
Orthotomus atrigularis, Temminck, Pl. Col. iii, text to livr. 101 (1836).

- 438 **Orthotomus ruficeps** (Less.).
Edela ruficeps, Lesson, Traite d' Orn.
p. 309 (1831).
- 439 **Orthotomus cineraceus**, Blyth.
Orthotomus cineraceus, Blyth, Journ.
Asiat. Soc. Bengal, xiv, p. 489
(1845).
- 440 **Orthotomus sepium**, Horsf.
Orthotomus sepium, Horsfield, Trans
Linn. Soc. xiii, p. 166 (1821).
- 441 **Cisticola cisticola** (Temm.).
Sylvia cisticola, Temminck, Man.
d' Orn. i, p. 228 (1820).
- 442 **Phylloscopus borealis** (Blas.).
Phyllopusneuste borealis, Blasius, Naum-
annia, 1858, p. 313.
- 443 **Phylloscopus presbytis**
(S. Mull.).
Muscicapa presbytis, S. Muller, Tijd
Nat. Gesch. ii, p. 331 (1835).
- 444 **Phyllergates cucullatus** subsp.
sumatranus, Salvad.
Phyllergates sumatranus, Salvadori,
Ann. Mus. Civ. Gen. (2) xii, p. 67
(1891).
- 445 **Suya superciliaris** subsp.
albigularis, Hume
Suya albigularis, Hume, Stray Feath.
i, p. 459 (1873).
- 446 **Prinia familiaris**, Horsf.
Prinia familiaris, Horsfield, Trans.
Linn. Soc. xiii, p. 165 (1820).
- 447 **Burnesia flaviventris** (Deless.).
Orthotomus flaviventris, Delessert.
Rev. Zool. 1840, p. 101.

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- 448 **Hemipus obscurus** (Horsf.).
Muscicapa obscura, Horsfield, Trans.
Linn. Soc. xiii, p. 146 (1822).
- 449 **Hemipus picatus** (Sykes).
Muscicapa picata, Sykes, P. Z. S. 1832,
p. 85.
- 450 **Tephrodornis gularis** (Raffles).
Lanius gularis, Raffles, Trans. Linn.
Soc. xiii, p. 305 (1822).
- 451 **Tephrodornis pelvicus** subsp.
sordida, Stoliczka.
Tephrodornis sordida, Stoliczka, Journ.
Asiat. Soc. Bengal, p. 320 (1870).
- 452 **Platylophus coronatus** (Raffl.).
Lanius coronatus, Raffles, Trans. Linn.
Soc. xiii, p. 306 (1822).
- 453 **Lanius bentet**, Horsf.
Lanius bentet, Horsfield, Trans. Linn.
Soc. xiii, p. 144 (1821).
- 454 **Lanius tigrinus**, Drap.
Lanius tigrinus, Drapiez, Dict. Class.
Nat. Hist. xiii, p. 523 (1818).
- 455 **Lanius lucionensis**, Linn.
Lanius lucionensis, Linnaeus, Syst.
Nat. i, p. 135 (1766).
- 456 **Lanius superciliosus**, Lath.
Lanius superciliosus, Latham, Ind. Orn.
Suppl., p. xx, No. 14 (1801).

FAMILY PARIDAE.

- 457 **Parus major** subsp. **malay-**
orum, Robinson and Kloss.
Antea, p. 226.
- 458 **Melanochlora sultanea** subsp.
flavocristata (Lafr.).
Parus flavocristatus, Lafresnaye, Mag.
Zool. 1837, pl. 80.

FAMILY SITTIDAE.

- 459 **Dendrophila azurea** subsp.
expectata (Hart.).
Callisitta azurea subsp. *expectata*,
Hartert, Bull. Brit. Orn. Club,
xxxv, p. 34 (1914).
- 460 **Dendrophila frontalis** (Horsf.).
Sitta frontalis, Horsfield, Trans. Linn.
Soc. xiii, p. 162 (1821).

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- 461 **Corvus enca** subsp. **compila-**
tor, Richm.
Corvus compilator, Richmond, Proc.
U. S. Nat. Mus. xxvi, p. 518 (1903).
- 462 **Corvus macrorhynchus**
(Wagl.).
Corvus macrorhynchus, Wagl. Syst. Av.,
Corvus sp. 3 (1827).

- 463 **Platysmurus leucopterus** (Temm.).
Glaucopsis leucopterus, Temminck, Pl. Col. 265 (1824).
- 464 **Cissa minor**, Cab.
Cissa minor, Cabanis, Mus. Hein. i, p. 86 note (1851).
- 465 **Dendrocitta occipitalis** (S. Mull.).
Glaucopsis occipitalis, Sal. Muller, Tijds. Natuur. Gesch. en Phys. II, p. 343, pl. ix, fig. 1 (1835).
- 466 **Crypsirhina varians** (Lath.).
Corvus varians, Latham, Ind. Orn. Suppl. p. xxvi, (1801).

FAMILY DICRURIDE.

- 467 **Dicrurus annectens** (Hodgs.).
Buchanga annectans, Hodgs. Ind. Rev. i, p. 326 (1837).
- 468 **Buchanga leucophaea** subsp. **phaedra**, Reichenw.
Buchanga stigmatops phaedra, Reichenow, Wissensch. Ergebn. d. Deutsch. Tiefsee Exped. vii, p. 356, 1904.
- 469 **Dicruopsis sumatranus** (Wardl. Rams.).
Dicrurus sumatranus, Wardlaw Ramsay, P. Z. S. 1880, p. 15.
- 470 **Chaptia aenea** subsp. **malayensis**, Blyth.
Chaptia malayensis, Blyth, Journ. Asiat. Soc. Bengal, xv, p. 294 (1845).
- 471 **Dissemurus paradiseus** subsp. **platurus** (Vieill.).
Dicrurus platurus, Vieillot, Nouv. Dict. d'Hist. Nat. ix, p. 588.
- 472 **Bhringa remifer** (Temm.).
Edolius remifer, Temminck, Pl. Col. iii, pl. 178 (1823).

FAMILY ORIOLIDAE.

- 473 **Oriolus maculatus** (Vieill.).
Oriolus maculatus, Vieillot, Nouv. Dict. d'Hist. Nat. xviii, p. 194 (1819).
- 474 **Oriolus melanocephalus**, Linn.
Oriolus melanocephalus, Linnaeus, Syst. Nat. i, p. 160 (1766).
- 475 **Oriolus zanthonotus**, Horsf.
Oriolus zanthonotus, Horsfield, Trans. Linn. Soc. xiii, p. 153 (1821).
- 476 **Oriolus cruentus** subsp. **consanguineus** (Wardl. Rams.).
Analcipus consanguineus, Wardlaw Ramsay, Ibis, 1881, p. 33, pl. 1, figs. 2, 3.

FAMILY ARTAMIDAE.

- 477 **Artamus leucogaster** (Valenc.).
Ocypterus leucogaster, Valenc. Mem. Mus. d'Hist. Nat. vi, p. 21, pl. vii, fig. 2 (1820).

FAMILY STURNIDAE.

- 478 **Sturnopastor jalla** (Horsf.).
Pastor jalla, Horsfield, Trans. Linn. Soc. xiii, p. 155 (1821).
- 479 **Sturnia sturnina** (Pall.).
Gracula sturnina, Pallas, Reis. Russ. Reichs. iii, p. 695 (1776).
- 480 **Gracula javana** (Cuv.).
Eulabes javanus Cuvier, Règne Anum. I, p. 377 (1829).
- 481 **Aplonis panayensis** subsp. **strigata** (Horsf.).
Turdus strigatus, Horsfield, Trans. Linn. Soc. iii, p. 148 (1821).

FAMILY PLOCEIDAE.

- 482 **Munia oryzivora**, Linn.
Loxia oryzivora, Linnaeus, Syst. Nat. i, p. 302 (1766).
- 483 **Munia maja** (Linn.).
Loxia maja, Linnaeus, Syst. Nat. i, p. 301 (1766).

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- 484 **Munia punctularia** subsp. **nisoria** (Temm.).
Fringilla nisoria, Temminck, Pl. Col. iii, pl. 500, fig. 2 (1830).
- 485 **Munia acuticauda**, Hodgs.
Munia acuticauda, Hodgs. Asiatic Researches, xix, p. 153 (1836).
- 486 **Munia leucogastroides** (Horsf. and Moore).
Munia leucogastroides, Horsfield and Moore, Cat. Birds East Ind. Co. ii, p. 510 (1856).
- 487 **Munia leucogastra** (Blyth).
Anaclua leucogastra, Blyth, Journ. Asiat. Soc. Bengal. xv, p. 286 (1846).
- 488 **Erythrura prasina** (Sparm.).
Loxia prasina, Sparrman, Mus. Carls. ii, pls. 72, 73 (1788).
- 489 **Ploceus passerinus** subsp. **infortunatus**, Hartert.
Ploceus passerinus infortunatus, Hartert, Nov. Zool. ix., 578 (1902).
- 490 **Ploceela javanensis** (Less.).
Loxia javanensis, Lesson, Traite, p. 446 (1831).

FAMILY FRINGILLIDAE.

- 491 **Passer montanus** subsp. **malaccensis**, Dubois.
Passer malaccensis, Dubois, Faun. Ill. Vertebr. Belg. Ois. i, p. 572 (1885).

FAMILY MOTACILLIDAE.

- 492 **Motacilla cinerea** subsp. **melanope**, Pall.
Motacilla melanope, Pallas, Reis. Russ. Reichs. iii, p. App. p. 696 (1776).
- 493 **Motacilla simillima**, Hart.
Motacilla flava simillima, Hartert, Vog. Palaarkt. Faun. heft III, p. 289 (1905).
- 494 **Motacilla taivana** (Swinh.).
Budytes taivanus, Swinhoe, P. Z. S. 1863, p. 334.
- 495 **Dendronanthus indicus** (Gm.).
Motacilla indica, Gmelin, Syst. Nat. i, p. 963 (1788).
- 496 **Anthus rufulus** subsp. **malayensis**, Eyton.
Anthus malayensis, Eyton, P. Z. S. 1839, p. 104.

FAMILY NECTARINIIDAE

- 497 **Chalcostetha pectoralis** (Temm.).
Nectarinia pectoralis, Temminck, Pl. Col. 138, fig. 3 (1823).
- 498 **Aethopyga temminckii** (S. Mull.).
Nectarinia temminckii, Sal. Mull. Natuur. Gesch. Land-en Volkenk. p. 173, note (1843).
- 499 **Aethopyga siparaja** (Raffl.).
Certhia siparaja, Raffles, Trans. Linn. Soc. xiii, p. 299 (1822).
- 500 **Leptocoma hasselti** (Temm.).
Nectarinia hasseltii, Temminck, Pl. Col. 376, fig. 3 (1825).
- 501 **Cyrtostomus ornata**, (Horsf.).
Nectarinia pectoralis, Horsfield, Trans. Linn. Soc. xiii, p. 167 (1821).
- 502 **Anthothreptes hypogrammica** (S. Mull.).
Nectarinia hypogrammica, Sal. Muller, Natuur. Gesch. Land-en Volkenk. p. 173 (1843).
- 503 **Anthothreptes simplex** (S. Mull.).
Nectarinia simplex, Sal. Muller, Natuur. Gesch. Land-en Volkenk. p. 173 (1843).
- 504 **Anthothreptes malaccensis** (Scop.).
Certhia malaccensis, Scopeli, Del. Flor. et Faun. Insubr. ii, p. 91 (1786).
- 505 **Anthothreptes rhodolaema**, Shelley.
Anthreptes rhodolaema, Shelley, Monogr. Nect. p. 313, pl. 101, fig. 1 (1878).
- 506 **Chalcoparia singalensis** (Gm.).
Motacilla singalensis, Gmelin, Syst. Nat. Vol. I, pt 2, p. 964 (1789).
- 507 **Arachnothera longirostris**, (Lath.).
Certhia longirostra, Latham, Ind. Orn. i, p. 299 (1790).
- 508 **Arachnothera affinis** (Horsf.).
Cinnyris affinis, Horsfield, Trans. Linn. Soc. xiii, p. 166 (1821).

- 509 **Arachnothera chrysogenys**, Temm.
Arachnothera chrysogenys, Temminck, Pl. Col. 388, fig. 1 (1826).
- 510 **Arachnothera robusta** subsp. **robusta**, Mull. and Schleg.
Arachnothera robusta, Sal. Muller and Schlegel, Verh. Nat. Gesch. p. 68, pl. 11, fig. 1 (1846).
- 511 **Arachnothera crassirostris** (Reichenb.).
Arachnothera crassirostris, Reichenb. Hand. Scans. p. 314, No. 747, (1859), pl. 592, fig. 4016.
- 512 **Arachnothera flavigaster** (Eyton).
Anthreptes flavigaster, Eyton, P. Z. S. 1839, p. 105.

* FAMILY DICAÆIDÆ.

- 513 **Dicaeum cruentatum** (Linn.).
Certhia cruentata, Linnaeus, Syst. Nat. i, p. 187 (1766).
- 514 **Dicaeum sumatranum**, Cab.
Dicaeum sumatranum, Cabanis, Journ. Fur. Orn. 1878, p. 101.
- 515 **Dicaeum sanguinolentum**, Temm.
Dicaeum sanguinolentum, Temminck, Pl. Col. iv, pl. 378, fig. 2 (1829).
- 516 **Dicaeum beccarii**, Rob. and Kloss.
Dicaeum beccarii, antea, p. 247.
- 517 **Dicaeum trigonostigma** (Scop.).
Certhia trigonostigma, Scopeli, Del. Flor. et Faun. Insubr. ii, p. 91 (1786).
- 518 **Dicaeum chrysorrhoeum**, Temm.
Dicaeum chrysorrhoeum, Temminck, Pl. Col. iv, pl. 478, fig. 1 (1829).
- 519 **Dicaeum olivaceum**, Walden.
Dicaeum olivaceum, Walden, Ann. and Mag. Nat. Hist (4) xv, p. 401 (18)
- 520 **Prionochilus ignicapillus** (Eyton).
Dicaeum ignicapillum, Eyton, P.Z.S. 1839, p. 105.
- 521 **Prionochilus maculatus** (Temm.).
Pardalotus maculatus, Temminck, Pl. Col. iii, pl. 600, fig. 3 (1836).

ZOSTEROPIDÆ.

- 522 **Zosterops montana** (Bp.).
Zosterops montana, Bonaparte, Consp. Av. i. p. 398 (1850).
- 523 **Zosterops difficilis**, Robinson and Kloss.
Antea, p. 250.
- 524 **Zosterops flava** (Horsf.).
Dicaeum flavum, Horsfield, Trans. Linn. Soc. xiii, p. 170 (1821).
- 525 **Zosterops buxtoni**, Nicholson.
Zosterops buxtoni, Nicholson, Ibis 1879, p. 167.
- 526 **Zosterops atricapilla**, Salvad.
Zosterops atricapilla, Salvadori, Ann. Mus. Civ. Gen. xiv, p. 215 (1879).

3 Gunong Si Bajak, Battak Mountains, N. W. Sumatra.

18 The Peacock undoubtedly occurs in Sumatra, though its occurrence there is questioned by many authorities.

23 We do not believe in the occurrence of the very dubious subspecies *Treron curvirostris nasica*, Schleg., originally described from Southern Borneo, in Sumatra though both Salvadori (*Ann. Mus. Civ. Gen. xiv, p. 77* (1879)) and Hartert (*Nov. Zool. ix, p. 215* (1902)) record it, the former from West Sumatra and the latter from the neighbourhood of Deli. In the former case it occurred flying in the same flocks as the typical race, as specimens of both were obtained by Beccari on the same date. We have elsewhere noted that the species is migratory. On February 15th, 1915 we picked up in the middle of the Straits of Malacca about 40 miles from the Sumatran Coast and about 30 from Selangor, a male which had dropped into the water so recently that its plumage was practically dry.

36 Vorderman records *Turtur bitorquata*, Temminck and Knip. Fig. i, p. 86, pl. 40 (1808-11) as occurring in Sumatra as *417 Stretopelia bitorquata*, Temm. (*Borneo, Java*). The occurrence only rests on a casual mention by Lesson and Wallace and we have followed Salvadori, Cat. Birds Brit. Mus. xxi, p. 421, (1892) in not accepting it. The species ranges from the lesser Sunda Ids. to Western Java and does not occur in Borneo.

46 The Water Cock, *Gallicrex cinerea* (*Fulica cinerea*, Gmelin, Syst. Nat. i, p. 702 (1788)) almost certainly occurs in Sumatra as stated by Sharpe (Cat. Birds Brit. Mus. xliii, p. 183 (1894)) though we can find no definite authority. It is included in Vorderman's list as *Gallicrex cristata*, Lath. without number and with a (?).

52 et seq. Among this family we have recorded as occurring in Sumatra all species which have been actually obtained in the Straits of Malacca. Vorderman only records with certainty 6 species of which one, No. 492 *Onychoprion fuliginosus*, Gm. (Archipel Indien) is certainly an error.

62 *Sterna sumatrana* is the species more generally known as *St. melanauchen*. Temm.

65 This petrel has been obtained at Singapore and at One Fathom Bank in the Straits of Malacca and almost certainly therefore occurs in Sumatran Waters.

66-95 Charadriiformes. In this group Vorderman records with certainty only 14 species of which one, *Himantopus leucocephalus*, Gould, F. Z. S. 1837, p. 26, rests on a casual mention of Sumatra by Sal. Muller (Verh. Land en Volkenk. p. 153 (1839-44)) and cannot be accepted. Another, No. 438 *Orthorhamphus magnirostris*, Geoffr. (Asie meridionale, Java) = *Edicnemus magnirostris*, Vieillot (ex Geoffr.) Nouv. Dict. d'Hist. Nat. xliii, p. 231 (1819), rests on no sufficient authority, though as it has been found on the Mergui Ids. and on Pulau Bintang in the Rhio Archipelago it will almost certainly be found ultimately in S. E. Sumatra. No. 449 *Numentus major*, Temm. (Malacca, Borneo, Java,) is a synonym of the Eastern Curlew *Numentus cyanopus*, Vieillot. Nouv. Dict. d'Hist. Nat. viii, p. 306 (1817), which does not extend to the Straits of Malacca though it is sometimes met with in Borneo and Java.

As regards our own list we have recorded as Sumatran most of the species that are found on the mud-flats of the Straits of Malacca with one or two exceptions.

In addition to those enumerated *Dromas ardeola*, Paykull, Königl. Vet-Akad. Handl. Stockh. xxvi, pp. 182, 188, tab. 1 (1805), the Crab Plover, which occurs occasionally on the Klang Islands will probably also be found on the western sides of the Straits.

96 *Plegadis falcinellus* (*Tantalus falcinellus*, Linnaeus, Syst. Nat. i, p. 241 (1766). This species is recorded as 478 *Falcinellus igneus*, Gm. (cosmopolite) by Vorderman. Though it not improbably occurs it is not vouched for by any authentic record.

99 This bird is a distinct species and not a local race of the preceding. It has been collected by Dr. W. L. Abbott and Mr. C. B. Kloss on the Little Siak River, Eastern Sumatra.

100 *Leptoptilus dubius* (*Ardea dubia*, Gmelin, Syst. Nat. i, p. 624 (1788), is recorded by Vorderman as No. 474 of his list but probably does not occur in the Malay Region.

122 The occurrence of *Phalacrocorax javanicus* (*Carbo javanicus* Horsfield, Trans. Linn. Soc. xiii, p. 197 (1821) in Sumatra, recorded by Vorderman as 486 *Microcarbo pygmaeus*, Pall. (Borneo, Java) remains to be verified.

125 *Phaethon rubricauda*, Boddaert, Tabl. Pl. Enl. p. 57 (1783) included in Vorderman's list as no. 491 does not appear to have been obtained nearer to Sumatra than Christmas Island, where it is common.

139 We know of no authentic record for either *Milvus affinis*, Gould, or *Milvus govinda*, Sykes, Nos. 9 and 10 of Vorderman's list.

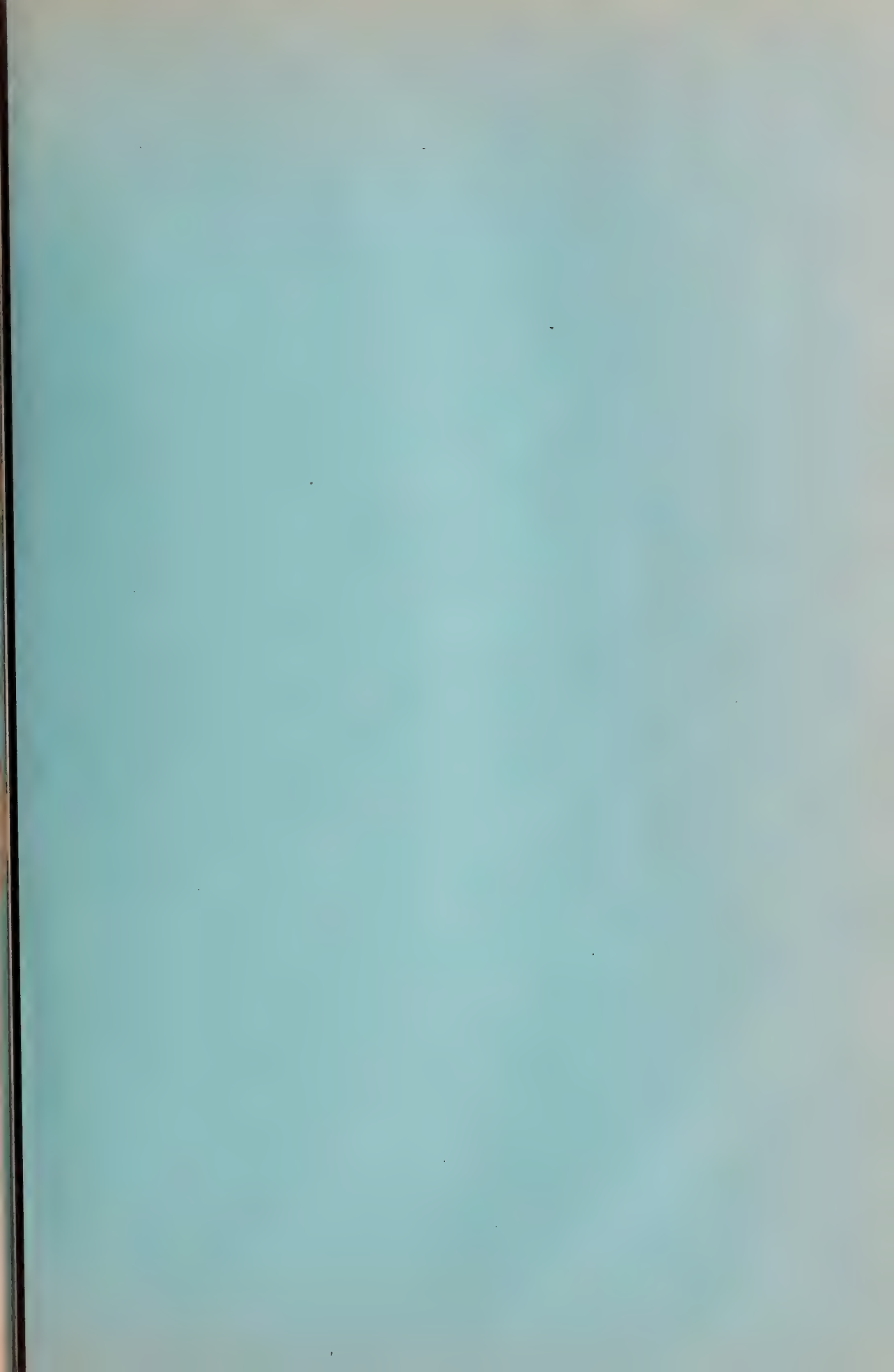
179 *Alcedo beryllina*, Vieillot, Nouv. Dict. d'Hist. Nat. xix, p. 414 (1818) is almost certainly confined to Java and certain of the lesser Sunda islands and does not occur in Sumatra (No. 107 of Vorderman's list).

203 *Caprimulgus pallidus*, Hartlaub and *Caprimulgus faberi*, Meyer, Nos. 131 and 133 of Vorderman, have no claim to specific distinctness.

298 et seq. Of the species listed by Vorderman 150 *Cyornis sumatrensis*, Sharpe; 159 *Rhipidura phaenicura*, Mull.; 161 *Rhipidura longicauda*, Wall; 162 *Rhipidura salvadori*, Sharpe; and *Xenogenys* (*Cochoa*) *azurea* do not occur in Sumatra.

334 et seq. Of the Caterpillar-Shrikes the following species are wrongly attributed by Vorderman to Sumatra, viz. 182 *Artamides bicolor*, Temm.; 185 *Graucalus javensis*, Horsf; 187 *Graucalus striatus*, Bodd.

N.B.—Since the above list was printed several new subspecies of Sumatran birds have been described and several further already-known species have been ascertained to occur. A list of these will be given in the final section of Part II of this Volume.



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ADDENDA.

BY H. C. ROBINSON AND C. BÖDEN KLOSS

Mammals	p. 312
Birds	319
Reptiles and Batrachians	362
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Mammals of Korinchi pp. 1-72.

ADDENDA.

p. 70. Read at the end of *Muntiacus muntjak montanus*.MEASUREMENTS OF KIJANG ANTLERS (*Muntiacus muntjak* subsp.) FROM THE KORINCHI VALLEY AND MOUNTAINS, SUMATRA.

Males.

No.	Height of antler ¹	Height of pedicel ²	Circumference of pedicel ³	Breadth between pedicels ⁴	Frontal suture, mean length.	Least interorbital breadth.	
662/14	125	80	65	102	100	51	Probably all assignable to the lowland form <i>M. m. meschatus</i> (Blainv.).
663/14	134	75	51	101	88	56	
664/14	114	95	61	103	92	52	
665/14	97	105	57	109	88	49	
667/14	119	72	61	105	..	..
666/14	109	85	56	105	..	51	
668/14	94	92	56	100	95	49	
669/14	109	95	56	108	89	51	
670/14	99	61	55	96	77	50	
671/14	112	60	50	82	83	46	
672/14	115	38	58	55	Vide note (5) below.
673/14	116	44	50	58	77	49	
674/14	107	68	45	63	..	..
675/14	98	53	48	61	80	43	Probably all assignable to the mountain form <i>M. m. montanus</i> K. & K.
676/14	92	58	44	70	74	43	
677/14	94	55	46	74	80	53	
678/14	98	44	51	69	77	47	

MEASUREMENTS OF KIJANG ANTLEERS (*Muntiacus muntjak* subsp.) FROM THE KORINCHI VALLEY
AND MOUNTAINS, SUMATRA.—(Contd.)

No.	Height of antler ¹	Height of pedicle ²	Circumfer- ence of pedicle ³	Breadth between pedicles ⁴	Frontal suture, mean length.	Least interorbital breadth.	
679/14	105	53	47	52	75	45	Probably all assignable to the mountain form <i>M. m. montanus</i> R & K.
680/14	97	55	44	74	76	46	
681/14	87	52	43	61	80	46	
682/14	68	66	43	83	82	44	
684/14	69	57	40	59	76	42	<i>M. m. montanus</i> . Sungei Kumbang, Korinchi Peak, 4,700 ft.
683/14	75	63	42	61	79	48	
377/14	73	55	44	72	81	45	
381/14	90	58	48	69	81	46	
398/14	66	57	40	67	81	44	Sungei Kring, Korinchi Peak, 7,300 ft.
456/14	100	50	45	62	77	42.5	
479/14	61	41	43	58	75	44	Type "
660/14	..	55	40	66	72	45	" "
661/14	51	55	35	65	78	40	" "

⁴ At slightly below base of burr.

¹ From lower base of burr to highest point in a straight line.

² From angle with skull to lower base of burr on inner side.

³ At mid-length.

⁵ Antlers much compressed laterally with a knife-edge behind; measuring an inch or more from front to back; Pedicels short and paralleled

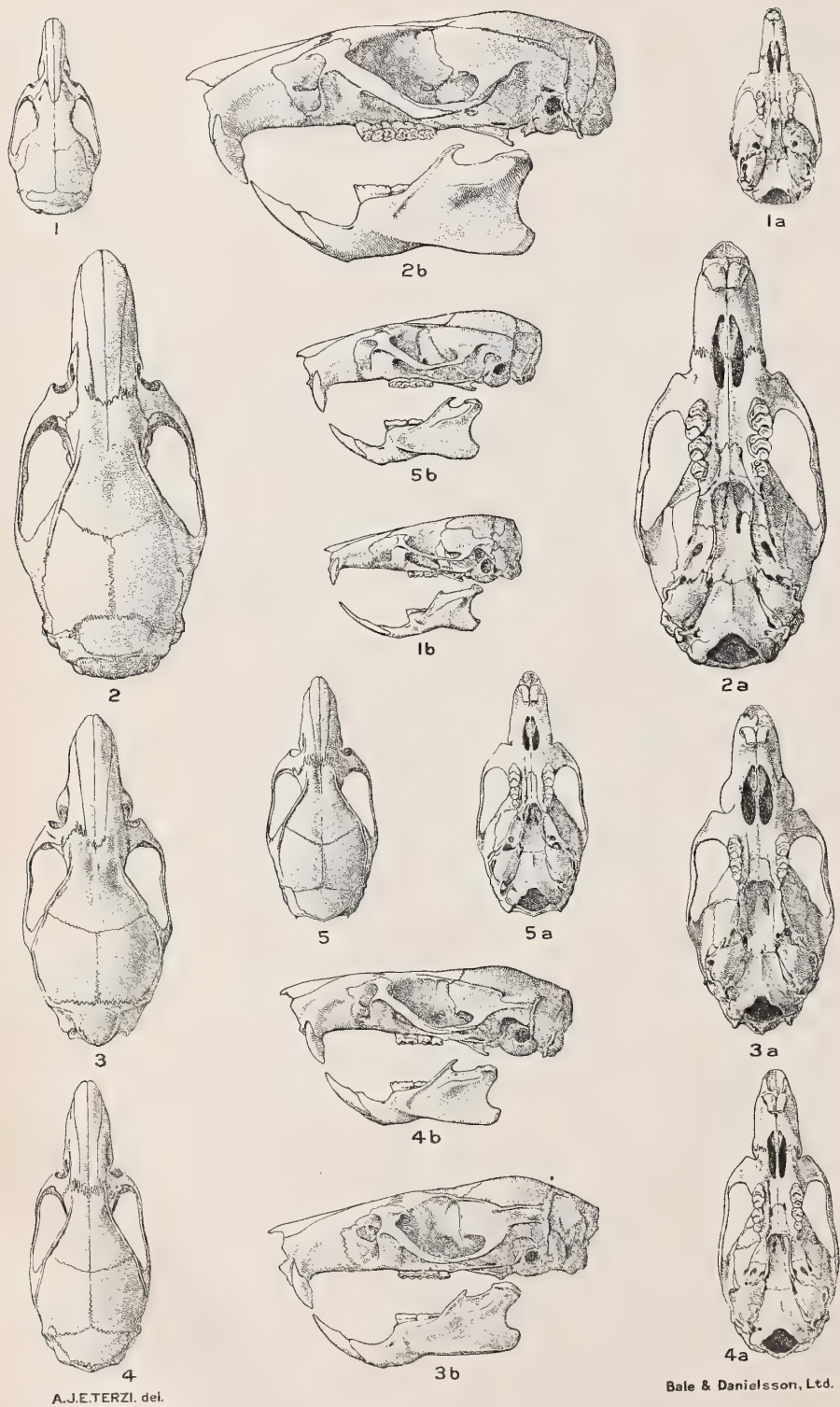
Mammals of Korinchi, pp. 1-72.

ADDENDA.

MEASUREMENTS OF *Muntiacus muntjak montanus* R. & K. FROM KORINCHI PEAK, SUMATRA.

LOCALITY AND ALTITUDE.	Sex.	Head and Body.	Tail.	Hind-foot.	Ear.	Greatest length.	Basal length.	Palatal length.	Upper molar row (alveoli).	Frontal suture, mean length.	Greatest breadth.	Least interorbital breadth.	Lower molar row (alveoli).	No.	REMARKS.
Sungei Kumbang, 4,700 ft.	♀	1000	145	295	88	192	168	114	57	77	84	43.8	68	329/14	Adult.
"	♀	935	150	295	85	194	171	116.5	52.3	74	84	43	64	399/14	"
"	♀	915	155	297	84	198	175	119	56.5	83	84	41.5	65	407/14	"
"	♂	1000	150	286	91	192	169	113	60	72	82	39	66	347/14	Immature.
"	♂	975	150	298	84	197	170	117	57.3	81	86.5	45	66	377/14	Adult.
"	♂	858	142	285	93	196	174	116	54	81	89	46	63	381/14	Aged: teeth much worn.
"	♂	935	135	295	88	199	..	113	56	81	84	44	63	398/14	Adult.
Sungei Kring, 7,300 ft.	♂	985	135	285	84	191	166	112	57	77	87	42.5	65	456/14	"
"	♂	910	95	295	85	187	164.5	113.5	56.5	75	88	44	64	479/14	Adult: teeth worn. Type.
"	♂	199	168	109.5	51.5	72	..	45	62	660/14	"
"	♂	182	160	107.5	55	78	79.5	40	63.5	661/14	Vix ad.





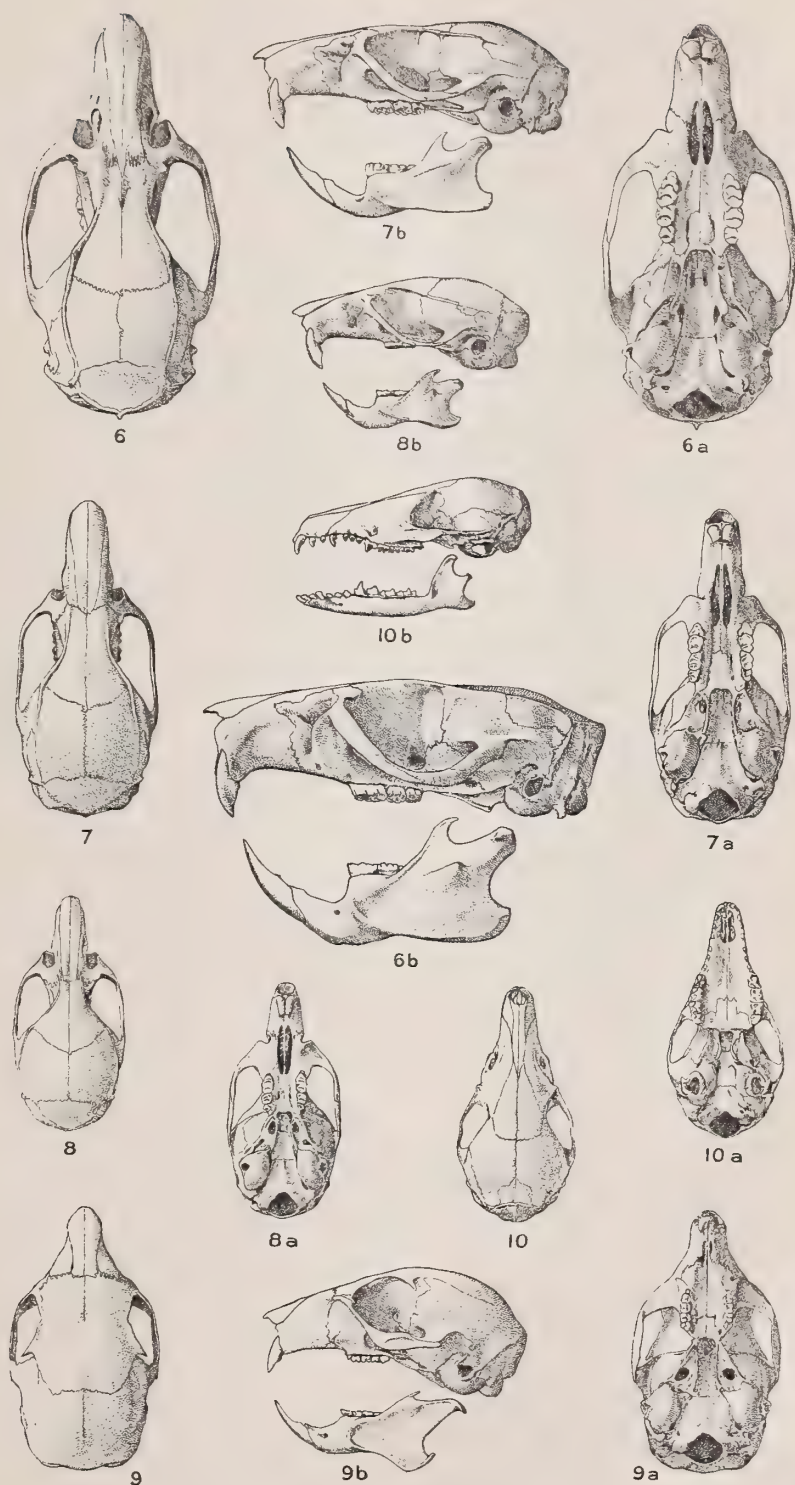
SKULLS of OROMYS and EPIMYS from KORINKI, SUMATRA.

Plate II.

- Figs. 1, 1a, 1b. *Mycteromys crociduroides* (R. & K.) Type.
pp. 57, 65.
- 2, 2a, 2b. *Rattus ciliatus setiger* (R. & K.) Type.
pp. 42, 59.
- 3, 3a, 3b. *Rattus inflatus* (R. & K.) Type.
pp. 45, 60.
- 4, 4a, 4b. *Rattus orbus fraternus* (R. & K.) Type.
pp. 47, 61.
- 5, 5a, 5b. *Rattus hylomyoides* (R. & K.) Type.
pp. 48, 62.

Plate III.

- Figs. 6, 6a, 6b. *Rattus mülleri mülleri* (Jent.) pp. 51, 63.
7, 7a, 7b. *Rattus baluensis korinchi* (R. & K.) Type.
p. 53.
8, 8a, 8b. *Rattus concolor stragulum* (R. & K.) Type.
pp. 56, 65.
9, 9a, 9b. *Tomeutes lowi vanakeni* (R. & K.) Type.
pp. 36, 39—40.
10, 10a, 10b. *Hylomys parvus* (R. & K.) Type.
pp. 20, 25.



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SKULLS of EPIMYS, SCIURUS and HYLOMYS from KORINKI, SUMATRA.

MAMMALS OF KORINCHI

(pp. 1—72)

CORRIGENDA.

- p. 13. For *Lutra vulgaris* barang read *Lutra lutra* barang.
- p. 17. For *Tupaia minor* subsp., read *Tupaia minor humeralis* Robinson and Kloss, Journ. F.M.S. Mus. VII, 1919, p. 265. Mountains of Bencoolen.
- p. 28. For *Petaurista petaurista marchio* Thomas, read *Petaurista petaurista batuana* Miller (*Petaurisata batuana* Miller, Smithsonian Misc. Coll. 45, 1903, p. 23, pl. 11, fig 5. Batu Ids) of which the former is a synonym.
- pp. 43, 59. For *Rattus rajah ravus* read *Rattus surifer ravus*.
- pp. 44, 45. For *Rattus rajah catellifer*, *R. r. surifer* and *R. r. lingensis* read *Rattus surifer catellifer*. *R. s. surifer* and *R. s. lingensis*.
- pp. 46, 60. For *Rattus pellax similis* read *Rattus rajah similis*.

Previous to an examination of the type of *Rattus rajah* (Thos) by Robinson (vide Ann. & Mag. Nat. Hist. (9) VII, 1921, p. 235) we had believed that *Rattus surifer* (Miller) was a subspecies of *Rattus rajah* and that *Rattus pellax* (Miller) represented a second species. It is, however, *R. pellax* which is a subspecies of *R. rajah*: so that the super-subspecies of the above Malaysian rats are, not *R. rajah* and *R. pellax* which are allied subspecies, but *Rattus rajah* and *Rattus surifer*.

LIST OF THE MAMMALS OF SUMATRA

(pp. 73—80)

ADDENDA.

- No. 40 a. *Mydaus javanensis* (Desm.)
Mephitis javanensis Desmarest, Mammologie, 1820, p. 187.
- No. 48 a. *Rhinoceros sondaicus* Desm.
Mammologie, 1822, p. 399.
- No. 62 a. *Petaurista punctata sumatrana* Kloss.
Journ. Fed. Malay States Mus. X, 1921, p. 230, pl. III.
- No. 103 a. *Rattus bukit* (Bonh.) subsp.
Robinson & Kloss, Journ. Fed. Malay States Mus. VII, 1919, p. 317.

Part II: Vertebrata.

- No. 108 a. **Rattus rattus rhionis** Thos. & Wr.
Mus rattus rhionis Thomas & Wroughton, Ann. & Mag. Nat. Hist. (8) III, 1909, p. 441.
- No. 115 a. **Mus musculus homourus** Hodgs.
 Ann. & Mag. Nat. Hist., XV, 1845, p. 268.
- No. 118 a. **Nyctocleptes sumatrensis sumatrensis** (Raffl.)
Mus sumatrensis Raffles, Trans. Linn. Soc. XIII, p. 258, (1921).
- No. 119 a. **Bandicota setifera** (Horsf.)
Mus setifer Horsfield, Zool. Res. Java, 1824, with plate.
- No. 119 b. **Gunomys bengalensis sundavensis** Kloss.
 Treubia, II, 1921, p. 116, pl. III.
- No. 143 a. **Crossogale phaeura sumatrana** Thomas.
 Ann. & Mag. Nat. Hist. (9) VII, 1921, p. 244.
- No. 150 a. **Dyacopterus spadiceus brooksi** Thomas.
 Ann. & Mag. Nat. Hist. (9) V, 1920, p. 284.
- No. 150 b. **Aethalops alecto** Thomas.
 Ann. & Mag. Nat. Hist. (9) XI, 1923, p. 251.

CORRIGENDA.

(pp. 73—80)

- No. 37. For **Mungos semitorquatus** etc., read **Mungos semitorquatus uniformis** Robinson & Kloss, Journ. Fed. Malay States Mus. VII, 1919, p. 302.
- No. 43. For **Lutra vulgaris barang** read **Lutra lutra barang**.
- No. 61. Delete **Petaurista petaurista marchio** Thos., which is synonym of No. 60, **P. p. batuana** Miller.
- No. 99. For **Rattus rajah lingensis** read **Rattus surifer lingensis**.
- No. 100. For **Ruttus rajah ravus** read **Rattus surifer ravus**.
- No. 102. For **Rattus pellax similis** read **Rattus rajah similis**.
- No. 110. For **Rattus rattus griseiventer** etc., read **Rattus rattus diardi** (Jent). *Mus diardi* Jentink, Notes Leyden Museum, II. 1880, p. 13. (*Mus griseiventer* is a synonym of *Mus diardi*).
- No. 129. Read **Tupaia minor humeralis** Robinson & Kloss, Journ. Fed. Malay States Mus. VII, 1919, p. 265.

NOTES.

p. 74. No. 36. Thomas has separated on colour distinctions a Deli specimen under the name of *Herpestes brachyurus sumatrius* (Ann. & Mag. Nat. Hist. (9), VIII, 1921, p. 134) from the typical Malaccan form *Mungos brachyurus brachyurus* (Gray). We have been unable to recognise any difference (vide Journ. F. M. S. Mus. VII, 1919, p. 303).

p. 77. No. 119. Specimens of the Bamboo-rat from Deli were separated by Thomas from the typical Malaccan form *Nyctocleptes sumatrensis* (Raffles) on account of small size and named *Nyctocleptes insularis* (Ann. & Mag. Nat. Hist. (8) XVI, 1915, p. 58). This race may exist as a Sumatran form of restricted locality but we have a series from the island in no way distinguishable from continental animals. (vide t. c. s. p. 316).

p. 77. No. 126. *Tupaia glis phoenicura* Thomas (Ann. & Mag. Nat. Hist. (9) 11, 1923, p. 255 "Deli"), appears to us to be synonymous with *T. g. demissa* Thomas, from Tanjong Bringin, Lower Langkat. In a small series from Toentoengan, Deli, collected by Mr. A. C. F. A. van Heyst between January 30th, and February 3rd, 1918, there are specimens which perfectly represent the two proposed races.

p. 78. (?) *Tupaia splendidula* Gray, should stand as No. 128a. A specimen in the Zoological Museum, Buitenzorg, No. 341, undoubtedly represents this species.

A NOMINAL LIST OF THE BIRDS OF SUMATRA.

Since the publication of our list of Sumatran birds in December 1918 (Journ. Fed. Malay States Mus. viii, pt. ii, pp. 261—284) additional collections and further information have shown that certain species must be deleted while others must be added.

Also it has been desirable to adopt various changes in nomenclature rendered necessary by recent activities in this branch of ornithology and we have therefore entirely recast the list; but we have no hope that it is final, particularly in the last respect. In addition to the original citation we have added the type locality of each species where such is specified; while in some cases we have, when necessary, supplied a typical locality, or restricted that originally specified, in accordance with current usage.

As we stated before, where Sumatran birds undoubtedly stand in subspecific relationship to others, the fact is indicated by the use of trinomials. Where binomials are used, it must not be considered that the species so indicated undoubtedly possess only one race, but that the birds mentioned are either the only form of the species, or belong to genera which have not yet been reviewed, or else that Sumatran material has not been critically examined so that the use of trinomials

in their case would, in the present state of our knowledge, merely create confusion.

It has been suggested to us that it would render the use of our list much easier to students who are not always acquainted with recent changes in nomenclature, or with recently described forms, if we were to give, in addition to the names we have used, those which are employed in the "Catalogue of Birds in the British Museum." We have therefore inserted the names of the "Catalogue" in square brackets; but only in those instances where they differ from our specific or subspecific nomenclature: generic differences have been disregarded. When referring to the "Catalogue" therefore, birds in our list should first be sought under the subspecific name given by us: if that is not found our species name should be looked for.

Thus *Criniger ochraceus sumatranus* will be found as *Criniger sumatranus* in the Catalogue and *Stachyris maculata pectoralis* as part of *Stachyris maculata*.

This amended list comprises 574 names against 527 in the earlier one. We hope that any additions and corrections known to readers, both in the species recorded and the nomenclature employed, will be communicated to us in order that we may publish them in this Journal and so keep our knowledge of the avifauna of Sumatra up to date. The geographic limits of the list are strictly those of the main island.

Various notes will be found at the end of the list under numbers which have an asterisk (*) placed against them.

By an oversight the following paper was omitted from the list of literature dealing with the avifauna of Sumatra on pp. 81—83, though before us at the time of writing.

1902. A Collection of Birds from Sumatra, obtained by Alfred C. Harrison, Jr., and Dr. H. M. Hiller. By Witmer Stone.

Proceedings of the Academy of Natural Sciences of Philadelphia, LIV, 1902, pp. 670—691.

We have been able to study large collections of Sumatran birds since our first list was compiled and have published the following accounts of two of them:—

1919, 1920. On a Collection of Birds from N. E. Sumatra. By H. C. Robinson and C. Boden Kloss.

Journal of the Straits Branch of the Royal Asiatic Society, No. 80, 1919, pp. 37-133 and map; id., op. cit. No. 81, 1920, pp. 77-115.

A report on a third collection, from various parts of Western Sumatra, will shortly appear in Vol. XI of this Journal.

ORDER GALLIFORMES.

FAMILY PHASIANIDÆ.

- 1 **Rhizothera l. longirostris** (Temm.).
Perdix longirostris, Temminck, *Pig. et Gallin.* iii, pp. 323, 721 (1815).
Sumatra.
- 2 **Arborophila rubrirostris** (Salvad.).
Peloperdix rubrirostris, Salvadori, *Ann. Mus. Civ. Gen.* xiv, p. 251 (1879).
Padang, W. Sumatra.
- 3 **Arborophila rollei**, Rothschild.
Rothschild, *Bull. Brit. Orn. Club.* xxv, p. 7 (1909). Battak Mts.,
Sumatra
- 4 **Arborophila orientalis sumatrana**, Ogilvie Grant.
Arborophila sumatrana, Ogilvie Grant, *Ann. and Mag. Nat. Hist.* (6) viii,
p. 297 (1891). Sumatra.
- 5 **Caloperdix oclea sumatrana**, Ogilvie Grant.
Caloperdix sumatrana, Ogilvie Grant, *Bull. Brit. Orn. Club.* i, p. 5 (1892).
Padang, Sumatra.
- 6* **Tropicoperdix charltoni**, Eyton.
Tropicoperdix charltoni, Eyton, *Ann. and Mag. Nat. Hist.* xvi, p. 230
(1845). Malacca.
- 7 **Rollulus roulroul** (Scop.).
Phasianus roulroul, Scopeli, *Del. Faun. et Faun. Insubr.* ii, p. 93 (1786).
Malacca.
- 8 **Melanoperdix n. nigra** (Vig.).
Cryptonyx niger, Vigors, *Zool. Journ.* iv, p. 349 (1829). Bencoolen, W.
Sumatra.
- 9 **Excalfactoria chinensis chinensis** (Linn.).
Tetrao chinensis, Linnaeus, *Syst. Nat.* i, p. 277 (1766). China.
- 10 **Excalfactoria chinensis palmeri**, Riley.
Excalfactoria chinensis palmeri Riley, *Proc. Biol. Soc. Washington*, 32,
p. 93 (1919). Daroe, Java.
- 11 **Houppifer e. erythrophthalmus** (Raffles).
Phasianus erythrophthalmus, Raffles, *Trans. Linn. Soc.* xiii, p. 321 (1822).
Bencoolen, W. Sumatra.
- 12 **Acomus inornatus**, Salvad.
Salvadori, *Ann. Mus. Civ. Gen.* xiv, p. 250 (1879). Padang, W.
Sumatra.
- 13* **Lophura rufa** (Raffles).
Phasianus rufus, Raffles, *Trans. Linn. Soc.* xiii, p. 321 (1822). Bencoolen,
W. Sumatra.
- 14* **Lophura sumatrana** (Dubois). [*Lophura rufa*].
Euplocamus sumatranus Dubois, *Bull. Acad. Belg.* (2) xlvii, p. 825 (1879).
Lampongs, S. Sumatra.
- 15* **Gallus f. ferrugineus** (Gm.). [*Gallus gallus*].
Tetras ferrugineus Gmelin, *Syst. Nat.* i, p. 761 (1788). Eastern
Indo-China.
- 16* **Gallus f. bankiva** Temm. [*Gallus gallus*].
Gallus bankiva Temminck, *Pig. et Gall.*, ii, p. 87 (1813). Java

- 17 **Polyplectron malaccensis** (Scop.). [*Polyplectron bicalcaratum*].
Phasianus malaccensis, Scopeli, Del Flor. et Faun. Insubr. ii, p. 93 (1786).
 Malacca.
- 18 **Polyplectron chalcureum**, Less.
Polyplectrum chalcureum, Lesson, Traite d'Orn. p. 487 (1831). Sumatra
- 19* **Argusianus a. argus** (Linn.).
Phasianus argus, Linnaeus, Syst. Nat. i, p. 272 (1866). Malacca
 (Hartert).

ORDER TURNICIFORMES.

FAMILY TURNICIDÆ.

- 20* **Turnix pugnax** (Temm.).
Hemipodius pugnax, Temminck, Fig. et Gall. iii, pp. 612, 754 (1815).
 Java.

ORDER COLUMBIFORMES.

FAMILY TRERONIDÆ.

- 21 **Butreron c. capellei** (Temm.).
Columba capellei, Temminck, Pl. Col. 143 (1823). Java.
- 22 **Sphenocercus oxyurus** (Reinw.).
Columba oxyura, Reinw. MS. in Temminck, Pl. Col. 240 (1823). Java
- 23 **Sphenocercus korthalsi** (Temm.).
Columba korthalsi, Temm. MS. in G. R. Gray, List. Gallinae Brit. Mus.
 p. 4 (1844). Sumatra.
- 24* **Treron curvirostra** (Gm.). [*Treron nipalensis* and (?) *T. nasica*.]
Columba curvirostra, Gmelin, Syst. Nat. i, p. 777 (1788). Malay Peninsula
 (Oberholser).
- 25 **Treron f. fulvicollis** (Wagl.).
Columba fulvicollis Wagler, Syst. Av. Columba, sp. 8 (1827). Sumatra.
- 26 **Treron v. vernans** (Linn.).
Columba vernans, Linnaeus, Mant. p. 526 (1771). Philippines.
- 27 **Treron olax** (Temm.).
Columba olax, Temminck, Pl. Col. 241 (1823). Sumatra.
- 28 **Ptilinopus roseicollis** (Wagl.).
Columba roseicollis Wagler, Syst. Av. Columba, n. 27 (1827). Java.
- 29 **Ptilinopus jambu** (Gm.).
Columba jambu, Gmelin, Syst. Nat. ii, 2, p. 784, n. 63 (1788). Sumatra
 (Hartert).
- 30* **Muscadivora a. ænea** (Linn.).
Columba ænea, Linnaeus, Syst. Nat. i, p. 283 (1766). Lesser Sunda Ids.
 (Hartert).
- 31 **Muscadivora b. badia** (Raffles.).
Columba badia, Raffles, Trans. Linn. Soc. xiii, p. 317 (1822). Bencoolen,
 W. Sumatra.
- 32 **Myristicivora bicolor** (Scop.).
Columba bicolor, Scopeli, Del. Flor et Faun. Insubr. ii, p. 94, n. 97 (1786).
 New Guinea.

FAMILY COLUMBIDÆ.

- 33 ***Columba argentina*** Bp. [*Columba grisea*].
Columba argentina Bonaparte, Consp. Gen. Avium, ii, p. 36 (1854). Borneo
 (Robinson and Kloss restricted).
- 34 ***Macropygia l. leptogrammica*** (Temm.).
Columba leptogrammica, Temminck, Pl. Col. 560 (1835). Java.
- 35* ***Macropygia e. emiliana*** Bp.
Macropygia emiliana Bonaparte, Consp. Avium, ii, p. 58 (1854). Java.
- 36 ***Macropygia ruficeps sumatranus*** Rob. & Kloss.
Macropygia ruficeps sumatranus Robinson and Kloss, Journ. Straits Branch
 Roy. Asiat. Soc. No. 80, p. 77 (1919). Ophir District, West Sumatra

FAMILY PERISTERIDÆ.

- 37 ***Streptopelia chinensis tigrina*** (Temm. and Knip.)
Columba tigrina, Temm. and Knip, Fig. pl. 43 (1808-11). Java.
- 38* ***Streptopelia b. bitorquata*** (Temm. and Knip.)
Columba bitorquata Temm. and Knip, Fig. i, fam. seconde, p. 86, pl. 40
 (1808-11) India. Errore! Java (Robinson and Kloss).
- 39 ***Geopelia striata*** (Linn.).
Columba striata, Linnaeus, Syst. Nat. i, p. 282, no. 18 (1766). East
 Indies.
- 40 ***Chalcophaps i. indica*** (Linn.).
Columba indica, Linnaeus, Syst. Nat. i, p. 284, no. 29 (1766). East
 Indies.
- 41 ***Caloenas n. nicobarica*** (Linn.).
Columba nicobarica, Linnaeus, Syst. Nat. i, p. 283, no. 27 (1766). Nicobar
 Islands.

ORDER RALLIFORMES.

FAMILY RALLIDÆ.

- 42* ***Hypotaenidia striata*** (Linn.).
Rallus striatus, Linnaeus, Syst. Nat. i, p. 262 (1766). Philippines.
- 43 ***Rallina fasciata*** (Raffles.).
Rallus fasciatus, Raffles, Trans. Linn. Soc. xiii, p. 328 (1822). Bencoolen,
 W. Sumatra.
- 44 ***Rallina superciliaris*** (Eyton).
Rallus superciliaris, Eyton, Ann. & Mag. Nat. Hist. xvi, p. 230 (1845).
 Malacca.
- 45 ***Poliolimnas c. cinereus*** (Vieill.).
Porphyrio cinereus, Vieillot, Nouv. Dict. xxviii, p. 29 (1819). Java.
- 46 ***Limnobaenus f. fuscus*** (Linn.).
Rallus fuscus, Linnaeus, Syst. Nat. i, p. 262 (1766). Philippines.
- 47* ***Limnobaenus paykulli*** (Ljung).
Rallus paykulli Ljung, Svensk. Vet. Akad. Handl., p. 258 (1813). Java.
- 48* ***Porzana p. pusilla*** (Pall.).
Rallus pusillus Pallas, Reise Prov. Russ. Reichs, iii, p. 700 (1776)
 Dauria.

- 49 **Amaurornis phoenicura javanica** (Horsf.).
Gallinula javanica, Horsfield, Trans. Linn. Soc. xiii, p. 196 (1821). Java.
- 50 **Gallinula chloropus orientalis**, Horsf.
Gallinula orientalis, Horsfield, Trans. Linn. Soc. xiii, p. 195 (1821). Java.
- 51 **Porphyrio poliocephalus bemmeleni**, Buttik.
Porphyrio bemmeleni, Buttikofer, Notes Leyden Mus. xi, p. 191 (1889). Toba Lake, Sumatra.
- 52 **Porphyrio c. calvus** (Vieill.).
Porphyrio calvus, Vieillot, Nouv. Dict. xxviii, p. 28 (1819). Java.
- 53* **Fulica atra lugubris**, S. Müll.
Fulica lugubris, Sal. Muller, Verh. Nat. Ges. Land-en Volkenk, p. 454 (1839-44). Java.
- 54* **Gallicrex cinere** (Gm.).
Fulica cinerea Gmelin, Syst. Nat. i, p. 702 (1788). China.

FAMILY HELIORNITHIDÆ.

- 55* **Heliopais personata** (G. R. Gr.).
Podica personata, G. R. Gray, P. Z. S. 1848, p. 90, Aves. Pl. 4. Malacca.

ORDER PODICIPEDIFORMES.

FAMILY PODICIPEDIDÆ.

- 56 **Podiceps ruficollis philippensis** (Bonn.).
Colymbus philippensis, Bonnerat Tabl. Encycl. Méth. i, p. 58, pl. 46, fig. 3 (1790). Philippines.

ORDER LARIFORMES.

FAMILY LARIDÆ.

- 57* **Hydrochelidon leucoptera** (Meisn. and Schinz).
Sterna leucoptera, Meisner and Schinz, Vog. Schweiz, p. 264 (1815). Switzerland.
- 58* **Gelochelidon nilotica** (Gm.). [*Geochelidon anglica*].
Sterna nilotica Gmelin, Syst. Nat. 2, p. 606 (1789). Egypt.
- 59* **Sterna hirundo tibetana**, Saunders. [*Sterna fluviatilis*].
Sterna tibetana, Saunders, P. Z. S. 1876, p. 649. Tibet.
- 60* **Sterna dougalli**, Mont.
Sterna dougali, Montague, Orn. Dict. Suppl. fig. (1813). Scotland.
- 61 **Sterna b. bengalensis** Less. [*Sterna media*].
Sterna bengalensis Lesson, Traite d'Ornith. 8, p. 621 (1831). India.
- 62* **Sterna bergii** Licht. subsp.
Sterna bergii Lichtenstein Verz. Doubl., p. 80, (1823). Cape of Good Hope.
- 63 **Sterna a. anaetheta**, Scop.
Sterna anaethetus, Scopeli Del. Flor. et Faun. Insubr. i, p. 92 (1786). Panay, Philippines.
- 64 **Sterna albifrons albifrons** Pall. [*Sterna minuta*].
Sterna albifrons Pallas, Vroeg's Cat. Versam. Vogelen, Adumbr., p. 6. (1764). Holland.

- 65 ***Sterna albifrons sinensis***, Gm.
Sterna sinensis, Gmelin Syst. Nat. i, p. 608 (1788). China.
- 66 ***Sterna albifrons saundersi***, Hume.
Sterna saundersi, Hume Stray Feath. v, pp. 324-6 (1877). Karachi, India.
- 67 ***Sterna s. sumatrana***, Raffles. [*Sterna melanura*].
Sterna sumatrana, Raffles, Trans. Linn. Soc. xiii, p. 329 (1822). Sumatra.
- 68 ***Anous stolidus pileatus*** (Scop.).
Sterna pileata Scopeli, Del. Faun. et Flor. Insubr. 2, p. 92, no. 73 (1786). Philippines.
- 69 ***Micranous leucocapillus*** (Gould).
Anous leucocapillus, Gould, P. Z. S. 1845, p. 103. N. E. Coast of Australia.

ORDER PROCELLARIIFORMES.

FAMILY PROCELLARIIDÆ.

- 70* ***Oceanodroma monorhis*** (Swinh.)
Thalussidroma monorhis, Swinhoe, Ibis, p. 386 (1867). Amoy, China.

ORDER CHARADRIIFORMES.

FAMILY CHARADRIIDÆ.

- 71 ***Arenaria i. interpres*** (Linn.)
Tringa interpres, Linnaeus, Syst. Nat. i, p. 248 (1766). Europe.
- 72 ***Xiphiopterus cucullatus*** (Temm.)
Vanellus cucullatus, Temminck, Pl. Col. v, pl. 505 (1830). Java.
- 73 ***Sarcogrammus indicus atronuchalis*** (Jerd.).
Lobivanellus atronuchalis, Jerdon, Birds India, iii, p. 648 (1864). Pegu.
- 74 ***Squatarola squatarola hypomelus***, Pall. [*Squatarola helvetica*].
Charadrius hypomelus, Pallas Reis. Russ. Reichs., iii, p. 369 (Seberia).
- 75 ***Charadrius apricarius fulvus*** (Gm.). [*Charadrius domenicus*].
Charadrius fulvus, Gmelin, Syst. Nat. i, p. 687 (1788). Tahiti.
- 76 ***Aegialites leschenaulti*** (Less.). [*Charadrius geoffroyi*].
Charadrius leschenaulti, Lesson, Dict. Sci. Nat. 42, p. 36 (1826). India.
- 77 ***Aegialites mongolus mongolus*** (Pall.)
Charadrius mongolus, Pallas, Reis. Russ. Reichs, iii, p. 700 (1776). Russia.
- 78 ***Aegialitis mongolus atrifrons*** Wagl. [*Charadrius pyrrhithorax*].
Charadrius atrifrons, Wagler, Isis, p. 650 (1829). Bengal.
- 79 ***Aegialitis dubius curonicus*** (Gm.).
Charadrius curonicus, Gmelin, Syst. Nat. i, p. 692 (1788). Curonia.
- 80 ***Aegialitis a. alexandrina*** (Linn.).
Charadrius alexandrinus, Linnaeus, Syst. Nat. i, p. 253 (1766). Egypt.
- 81 ***Numenius arquatus lineatus*** Cuv.
Numenius lineatus, Cuv. Regne Anim. i, p. 521 (1829). India.
- 82 ***Numenius phaeopus variegatus*** Scop.
Numenius variegatus, Scopeli, Del. Flor. et Faun Insubr. ii, p. 92 (1786). Siberia.

- 83 ***Limosa lapponica baueri*** Nauman [*Limosa novae-zealandiae*].
Limosa baueri Nauman, Vög Deutschl., iii, p. 429 (1836). New Holland;
Victoria
- 84 ***Limosa limosa melanuroides*** Gould.
Limosa melanuroides, Gould, P. Z. S., p. 84 (1846). North Australia.
- 85 ***Totanus totanus eurhinus*** Oberh. [*Totanus calidris*]
Totanus totanus eurhinus, Oberholser, Proc. U. S. Nat. Mus., xxii, p. 207
(1900). Ladak.
- 86 ***Tringoides hypoleucus*** (Linn.).
Tringa hypoleucus, Linnaeus, Syst. Nat. i, p. 250 (1766). Sweden.
- 87 ***Terekia cinerea*** (Guldenst.)
Scolopax cinerea, Guldenstart, Nov. Comm. Petrop. xix, p. 473, pl. 19
(1774). Caspean Sea.
- 88 ***Glottis nebularius*** (Gunner.)
Scolopax nebularius, Gunner, Læm. Lapp. Beschr. p. 251 (1767).
Norway
- 89* ***Rhyacophilus glareola*** (Gm.).
Tringa glareola, Gmelin, Syst. Nat. i, p. 677 (1788). Sweden
- 90 ***Limonites ruficollis*** (Pall.)
Trynga ruficollis, Pallas, Reis. Russ. Reichs. iii, p. 700 (1776). Russia
- 91 ***Limonites minutella subminuta*** (Middend.). [*Limonites dam-
acensis*].
Tringa subminuta, Middendorf, Reise. N. & O. Siber. ii, p. 222 (1851).
Siberia.
- 92 ***Ancylochilus ferrugineus*** (Brün.). [*Ancylochilus subarquatus*].
Tringa ferruginea, Brünnich, Orn. Bor. p. 53 (1764). Iceland, Caspian
Sea.
- 93 ***Tringa tenuirostris*** (Horsf.). [*Tringa crassirostris*].
Totanus tenuirostris, Horsf. Trans. Linn. Soc. xiii, p. 192 (1821). Java.
- 94 ***Limicola falcinella sibirica*** Dresser. [*Limicola platyrhyncha*].
Limicola sibirica, Dresser, P. Z. S., p. 674 (1876). Siberia
- 95 ***Gallinago stenura*** (Kuhl.).
Scolopax stenura, Kuhl. fide Bp. Ann. Stor. Nat. Bologna, iv, fasc. xiv,
p. 335 (1830). Sunda Ids.
- 96 ***Gallinago g. gallinago*** (Linn.).
Scolopax gallinago, Linn. Syst. Nat. i, p. 244 (1766). Europe.
- 97 ***Scolopax s. saturata***, Horsf.
Scolopax saturata, Horsfield, Trans. Linn. Soc. xiii, p. 191 (1821). Java.
- 98 ***Rostratula benghalensis benghalensis*** (Linn.). [*Rostratula
capensis*].
Rallus benghalensis, Linn. Syst. Nat. i, p. 153 (1758). Asia.

FAMILY PARRIDÆ.

- 99 ***Metopidius indicus*** (Lath.).
Parra indica, Lath. Ind. Orn. ii, p. 765 (1790). India.

FAMILY GLAREOLIDÆ.

- 100 ***Glareola maldivarum*** Forst. [*Glareola orientalis*].
Glareola (pratincola) maldivarum, Forster, Faun. Ind. p. 11 (1795).
Maldives.

ORDER ARDEIFORMES.

FAMILY IBIDIDÆ.

- 101* **Ibis melanocephala** (Lath.).
Tantalus melanocephalus, Latham, Ind. Orn. ii, p. 709 (1790). India.

FAMILY CICONIIDÆ.

- 102 **Pseudotantalus cinereus** (Raffles).
Tantalus cinereus, Raffles, Trans. Linn. Soc. xiii, p. 327 (1822). Sumatra.
- 103 **Dissoura episcopus neglecta**, Finsch.
Dissoura neglecta, Finsch, Ornith Monatsber, p. 94 (1904). Java.
- 104* **Dissoura stormi** (Blas.).
Melanopelargus episcopus stormi, Blasius, Mitteil. Naturh. Mus. Lübeck, 11, Reihe Hefh, x, p. 120 (1896). Borneo
- 105* **Leptoptilus javanicus** (Horsf.).
Ciconia javanica, Horsfield, Trans. Linn. Soc. xiii, p. 188 (1821). Java.

FAMILY ARDEIDÆ.

- 106 **Pyrrherodias purpurea manillensis** (Meyen).
Ardea purpurea, var. *manillensis*, Meyen, Acta Acad. Leop. Carol. xvi. Suppl. p. 102 (1830). Philippines.
- 107 **Ardea sumatrana** Raffles.
Ardea sumatrana, Raffles, Trans. Linn. Soc. xiii, p. 325 (1822). Sumatra.
- 108 **Ardea cinerea jouyi**, Clark.
Ardea cinerea jouyi, Clark, Proc. U. S. Nat. Mus. xxxii, p. 468 (1907). Korea.
- 109 **Mesophoyx i. intermedia** (Wagl.).
Ardea intermedia, Wagler, Isis, 1829, p. 659. Java.
- 110* **Herodias alba** (Linn.).
Ardea alba, Linnaeus, Syst. Nat. i, p. 144 (1758). Europe.
- 111* **Garzetta garzetta** (Linn.).
Ardea garzetta, Linnaeus, Syst. Nat. i, p. 237 (1766). "Habitat in Oriente."
- 112 **Demiegretta s. sacra** (Gm.).
Ardea sacra, Gmelin, Syst. Nat. i, p. 640 (1788). Tahiti.
- 113 **Nycticorax n. nycticorax** (Linn.).
Ardea nycticorax, Linnaeus, Syst. Nat. i, p. 235 (1766). S. Europe.
- 114 **Gorsachius m. melanolophus** (Raffles).
Ardea melanolopha, Raffles, Trans. Linn. Soc. xiii, p. 326 (1822). Sumatra.
- 115 **Butorides striatus javanicus** (Horsf.).
Ardea javanica, Horsfield, Trans. Linn. Soc. xiii, p. 190 (1821). Java.
- 116* **Bubulcus ibis coromandus** (Bodd.).
Cancroma coromanda, Boddaert, Tabl. Pl. Enl. p. 54 (1783). Coromandel Coast, India.
- 117 **Ardetta s. sinensis** (Gm.).
Ardea sinensis, Gmelin, Syst. Nat. i, p. 642 (1788). China

- 118 ***Ardetta sinensis pulchra***, Hume.
Ardetta pulchra, Hume, Stray Feath. i, pp. 308, 309, 422 (1873).
 Andamans.
- 119 ***Ardetta cinnamomea*** (Gm.).
Ardea cinnamomea, Gmelin, Syst. Nat. i, p. 643 (1788). China.
- 120* ***Nannocnus eurythmus*** (Swinh.)
Ardetta eurythma, Swinhoe, Ibis, p. 74 (1873). Amoy, S. China.
- 121 ***Dupetor f. flavicollis*** (Lath.).
Ardea flavicollis, Latham, Ind. Orn. ii, p. 701 (1790). India.

ORDER ANSERIFORMES.

FAMILY ANATIDÆ.

- 122 ***Asarcornis s. scutulata*** (S. Mull.).
Anas scutulata, Sal. Muller, Verh. Land-en Volkenk. p. 159 (1839-44).
 Java.
- 123 ***Nettopus coromandelianus*** (Gm.).
Anas coromandeliana, Gmelin, Syst. Nat. i, p. 522 (1788). Coromandel
 Coast, India.
- 124 ***Dendrocyena javanica*** (Horsf.).
Anas javanica, Horsfield, Trans. Linn. Soc. xiii, p. 199 (1821). Java.
- 125* ***Dendrocyena arcuata*** (Horsf.).
Anas arcuata, Horsf, Zool. Res. in Java, (1822). Java.
- 126 ***Anas s. superciliosa***, Gm.
Anas superciliosa, Gmelin, Syst. Nat. i, p. 537 (1788). New Zealand.
- 127 ***Querquedula querquedula*** (Linn.).
Anas querquedula, Linnaeus, Syst. Nat. i, p. 203 (1766). Europe.

ORDER PELICANIFORMES.

FAMILY PLOTIDÆ.

- 128* ***Plotus melanogaster*** (Gm.).
Plotus melanogaster, Gmelin, Syst. Nat. i. pt. ii. p. 580 (1788). Ceylon
 and Java.

FAMILY PHALACROCORACIDÆ.

- 129* ***Phalacrocorax carbo*** (Linn.).
Pelecanus carbo, Linnaeus Syst. Nat. i. p. 133 (1758). Europe.

FAMILY FREGATIDÆ.

- 130* ***Fregata aquila*** (Linn.).
Pelecanus aquilus, Linnaeus, Syst. Nat. i, p. 216 (1766). Ascension Id.
- 131 ***Fregata minor*** (Gm.). Subsp. (?)
Pelecanus minor, Gmelin, Syst. Nat. i. p. 572 (1788). Jamaica (Mathews)
 Eastern Indian Ocean (Rothchild).
- 132 ***Fregata ariel*** (Gould) Subsp. (?)
Attagen ariel, Gould in G. R. Gray's Genera Birds. iii, p. 669 (1845).
 E. Australia.

FAMILY PHAETHONTIDAE.

133* **Phaethon indicus**, Hume.*Phaethon indicus*, Hume, *Stray Feath.* iv, p. 481 (1876). Mekran Coast.

FAMILY SULIDAE.

134 **Sula piscator** (Linn.).*Pelecanus piscator*, Linnaeus, *Syst. Nat.* i, p. 134 (1758). India and Europe.135 **Sula cyanops** (Sundev.).*Dysporus cyanops*, Sundevall, *Phys. Sällsk. Tidsk.*, i, p. 218, pl. v, (1837). Equatorial belt of the Atlantic.136 **Sula sula** (Linn.).*Pelecanus sula*, Linnaeus, *Syst. Nat.* i, p. 218 (1766). Indian Ocean.

FAMILY PELECANIDAE.

137 **Pelecanus onocrotalus roseus** (Gm.).*Pelecanus roseus*, Gmelin, *Syst. Nat.* i, p. 570 (1788). Luzon.138 **Pelecanus philippensis**, Gm.*Pelecanus philippensis*, Gmelin, *Syst. Nat.* i, p. 571 (1788). Philippines.

ORDER ACCIPITRIFORMES.

FAMILY FALCONIDAE.

139 **Lophospizias t. trivirgatus** (Temm.).*Falco trivirgatus*, Temminck *Pl. Col.* pl. 303 (1824). Sumatra.140 **Aster badius poliopsis**, Hume.*Micronis poliopsis* Hume, *Stray Feathers*, ii, p. 325 (1874). Pegu.141 **Astur s. soloensis** (Horsf.).*Falco soloensis*, Horsfield, *Trans. Linn. Soc.* xiii, p. 137 (1821). Java.142 **Accipiter virgatus virgatus** (Temm.).*Falco virgatus*, Reinwardt: Temminck, *Pl. Col.* pl. 109 (1824). Java.143 **Accipiter virgatus gularis** (Temm. and Schleg.).*Astur gularis*, Temminck and Schlegel, *Faun. Japon. Aves*, p. 5, pl. 2 (845-50). Japan.144 **Lophotriorchis kieneri** (de Sparre).*Astur kienerii*, de Sparre; Geoffr. *St. Hil.*, *Mag. de Zool. Aves*, pl. 35 (1835). Himalayas.145 **Ictinaetus m. malayensis** (Reinw.).*Falco malayensis*, Reinwardt: Temminck, *Pl. Col.* pl. 117 (1824). Java.146 **Spilornis cheela bassus** (Forst.). [*Spilornis bachu*].*Falco bassus*, Forster, *Naturgesch. African Vog.* p. 55 (1798). Sumatra (Oberholser)147 **Haliaetus leucogaster** (Gm.).*Falco leucogaster*, Gmelin, *Syst. Nat.* i, p. 257 (1788). New South Wales.148 **Haliastur indus intermedius**, Gurney.*Haliastur intermedius*, Gurney, *Ibis*, p. 28 (1865). Java.149* **Elanus caeruleus hypoleucus**, Gould.*Elanus hypoleucus*, Gould, *P. Z. S.* p. 127 (1859). Macassar, Celebes

- 150 **Machæramphus alcinus**, Westerm.
Machæramphus alcinus, Westermarck Bijd. T. D. Dierk, i, p. 30, pl. (1848). Malacca.
- 151* **Pernis apivorus orientalis**, Tacz.
Pernis orientalis, Taczanowski, Faune Orn. Sib. Or. i, p. 50 (1891). E. Siberia.
- 152* **Pernis apivorus ptilorhynchus** (Temm.).
Falco ptilorhynchus, Temminck, Pl. Col. 44 (1823). Java and Sumatra. (Java restricted).
- 153 **Baza j. jerdoni** (Blyth). [*Baza sumatrensis*].
Lophastur jerdoni, Blyth, Journ. Asiat. Soc. Bengal, xi, p. 464 (1842). Malacca.
- 154 **Microhierax fringillarius** (Drap.).
Falco fringillarius, Drapiez, Dict. Class. d'Hist. Nat. vi, p. 412, pl. v (1824). Malacca (Swann).
- 155 **Falco peregrinus calidus**, Lath. [*Falco communis*].
Falco calidus, Latham, Ind. Orn. i, p. 41 (1790). India.
- 156 **Falco peregrinus ernesti**, Sharpe. [*Falco communis*].
Falco ernesti, Sharpe, Ibis, p. 545 (1894). N. Borneo.
- 157 **Falco s. severus**, Horsf.
Falco severus, Horsfield, Trans. Linn. Soc. xiii, p. 135 (1821). Java.
- 158 **Spizaetus cirrhatus limnaetus** (Horsf.).
Falco limnaetus, Horsfield, Trans. Linn. Soc. xiii, p. 138 (1821). Java.
- 159 **Spizaetus alboniger**, Blyth.
Nisaetus alboniger, Blyth, Journ. Asiat. Soc. Bengal, xiv, p. 173 (1845). Malacca.

FAMILY PANDIONIDAE.

- 160* **Pandion haliaetus** (Linn.).
Falco haliaetus, Linnaeus, Syst. Nat. i, p. 129 (1766). Europe.
- 161 **Polioaetus ichthyaetus** (Horsf.).
Falco ichthyaetus, Horsfield, Trans. Linn. Soc. xiii, p. 136 (1821). Java.
- 162 **Polioaetus h. humilis** (Müller and Schlegel).
Falco humilis, Müller and Schlegel, Verhandl. Nat. Gesch., Aves. p. 47, pl. 6 (1839-44). Sumatra.

ORDER STRIGIFORMES.

FAMILY BUBONIDAE.

- 163 **Ketupa k. ketupu** (Horsf.). [*Ketupa javanensis*].
Strix ketupu, Horsfield, Trans. Linn. Soc. xiii, p. 141 (1821). Java.
- 164 **Huhua s. sumatrana** (Raffles). [*Bubo orientalis*].
Strix sumatrana, Raffles, Trans. Linn. Soc. xiii, p. 279 (1822). Sumatra.
- 165 **Otus bakkamoena lempiji** (Horsf.).
Strix lempiji, Horsfield, Trans. Linn. Soc. xiii, p. 140 (1821). Java.
- 166 **Otus solokensis**, (Hartert).
Pisorhina solokensis, Hartert, Bull. Brit. Orn. Club ii, p. xxxix. (1893). Padang Highlands, Sumatra.
- 167 **Otus rufescens** (Horsf.).
Strix rufescens, Horsfield, Trans. Linn. Soc. xiii, p. 140 (1821). Java.

- 168 **Otus l. luciae** (Sharpe).
Pisorhina luciae, Sharpe, Ibis, p. 478 (1888). Kinabalu, N. Borneo
- 169 **Otus vandewateri** (Rob. and Kloss).
Pisorhina vandewateri, Robinson and Kloss, Journ. Straits Branch. Roy. Asiat. Soc. 73, p. 275 (1916) Korinchi, Sumatra
- 170 **Ninox scutulata scutulata** (Raffles).
Strix scutulata, Raffles, Trans. Linn. Soc. xiii, p. 280 (1822). Sumatra
- 171 **Ninox scutulata malaccensis** (Eyton).
Athene malaccensis, Eyton, Ann. & Mag. Nat. Hist. xvi, p. 228 (1845). Malacca.
- 172 **Glaucidium brodiei sylvaticum** (Bp.).
Athene sylvatica, Bonaparte, Consp. Av. p. 40 (1850). Padang Highlands, Sumatra.
- 173 **Strix indranee myrtha** (Bp.).
Ciccaba myrtha, Bonaparte, Consp. Av. i, p. 44 (1850). Sumatra.
- 174 **Photodilus b. badius** (Horsf.).
Strix badia, Horsfield, Zool. Res. Java, pl. 37 (1824). Java.

FAMILY TYTONIDÆ.

- 175 **Tyto alba javanica** (Gm.). [*Strix flammea*].
Strix javanica, Gmelin, Syst. Nat. i, p. 295 (1788). Java.

ORDER PSITTACIFORMES.

FAMILY PSITTACIDÆ.

- 176 **Conurus longicauda** (Bodd.).
Psittacus longicauda, Boddaert, Tabl. Pl. Enl. p. 53 (1783) Malacca.
- 177 **Psittinus c. cyanurus** (Forst.) [*Psittinus incertus*].
Psittaculus cyanurus, Forster, Faun. Ind., p. 6 (1795). Malacca.
- 178 **Loriculus galgulus** (Linn.).
Psittacus galgulus, Linnaeus, Syst. Nat. i, p. 103 (1758). Malacca (Hartert).

ORDER CORACIIFORMES.

FAMILY PODARGIDÆ.

- 179 **Batrachostomus auritus**, (J. E. Gray).
Podargus auritus, Gray in Griffith ed Cuv. Anim. Kingd. ii, p. 114 (1820). Sumatra.
- 180 **Batrachostomus poliophus**, Hartert.
Batrachostomus poliophus, Hartert, Notes Leyden Mus. p. 63 (1892). W. Sumatra.
- 181 **Batrachostomus stellatus** (Gould).
Podargus stellatus, Gould, P. Z. S. p. 43 (1837). Malacca (Hartert).
- 182 **Batrachostomus javensis** (Horsf.).
Podargus javensis, Horsf. Trans. Linn. Soc. xiii, p. 141 (1821). Java.
- 183 **Batrachostomus affinis**, Blyth.
Batrachostomus affinis, Blyth, Journ. Asiat. Soc. Bengal p. 1180 (1847). Malacca.

FAMILY CORACIIDÆ.

- 184 **Eurystomus o. orientalis** (Linn.).
Coracias orientalis, Linnaeus, Syst. Nat. i, p. 159 (1766). Java (Stresemann).
- 185 **Eurystomus o. calonyx**, Hodgs.
Eurystomus calonyx, Hodgs.; Sharpe, P. Z. S. 1890, p. 551. Himalayan Terai.

FAMILY ALCEDINIDÆ.

- 186 **Ramphalcyon capensis capensis** (Linn.). [*Pelargopsis fraseri*].
Alcedo capensis, Linnaeus, Syst. Nat. i, p. 180 (1766). Java (Oberholser).
- 187 **Ramphalcyon capensis cyanopteryx**, Oberholser.
Ramphalcyon capensis cyanopteryx, Oberholser, Proc. U. S. Nat. Mus. xxxv, p. 676 (1909). Tapanuli Bay, N. W. Sumatra.
- 188 **Alcedo atthis bengalensis**, Gm. [*Alcedo ispida*].
Alcedo bengalensis, Gmelin, Syst. Nat. i, p. 450 (1788). Bengal.
- 189 **Alcedo euryzona**, Temm.
Alcedo euryzonina, Temminck, Pl. Col. text in livr. 86 (1830). Java.
- 190* **Alcedo m. meninting**, Horsf.
Alcedo meninting, Horsfield, Trans. Linn. Soc. xiii, p. 172 (1821). Java.
- 191* **Ceyx r. rufidorsus** Strickl. [*Ceyx euerythra*].
Ceyx rufidorsa, Strickland, P. Z. S. p. 99 (1846). Malacca.
- 192* **Ceyx t. tridactylus** (Pall.).
Alcedo tridactyla, Pallas, Spic. Zool. vii, p. 10, abt. 2, fig. 1 (1767). India.
- 193* **Ceyx enopopygius**, Oberholser.
Ceyx enopopygius, Smithsonian Misc. Coll. 60, No. 7, p. 7 (1912). Aru Bay, N. E. Sumatra.
- 194* **Halcyon c. coromanda** (Lath.).
[*Alcedo*] *coromanda*, Latham, Ind. Orn. i, p. 252 (1790). Rangoon (Oberholser).
- 195* **Halcyon c. neophora** (Oberholser).
Eutamias neophora coromanda neophora, Oberholster, Proc. U. S. Nat. Mus. 48, p. 646 (1915). Tapanuli Bay, N. W. Sumatra.
- 196 **Halcyon pileata** (Bodd.).
Alcedo pileata, Boddaert, Tabl. Pl. Enl. p. 41 (1782). China.
- 197 **Halcyon sancta**, Vig. and Horsf.
Halcyon sanctus, Vigors & Horsfield, Trans. Linn. Soc. xv, p. 206 (1826). New South Wales.
- 198* **Halcyon chloris armstrongi**, Sharpe.
Halcyon armstrongi, Sharpe, Cat. Birds Brit. Mus. xvii, p. 277, pl. 7, fig. 1 (1892). Siam.
- 199* **Halcyon c. cyanescens** (Oberh.).
Sauropates chloris cyanescens, Oberholser, Proc. U. S. Nat. Mus. 52, p. 189 (1917). Pulo Taya near Lingga Id., S. E. Sumatra.
- 200 **Halcyon concreta** (Temm.).
Dacelo concreta, Temminck, Pl. Col. iv, pl. 346 (1825). Sumatra.
- 201 **Carcineutes pulchellus** (Horsf.).
Dacelo pulchella, Horsfield, Trans. Linn. Soc. xiii, p. 175 (1821). Java.

FAMILY BUCEROTIDÆ.

- 202* **Buceros r. rhinoceros**, Linn.
Buceros rhinoceros, Linnaeus, Syst. Nat. i, p. 153 (1766). Malacca.
- 203 **Dichoceros bicornis** (Linn.).
Buceros bicornis, Linnaeus, Syst. Nat. i, p. 153 (1766). China (errore).
 N Malay Peninsula (Robinson & Kloss).
- 204 **Anthracoceros coronatus convexus** (Temm.).
Buceros convexus, Temminck, Pl. Col. 530 (1832). Java.
- 205 **Anthracoceros malayanus** (Raffl.).
Buceros malayanus, Raffles, Trans. Linn. Soc. xiii, p. 292 (1822).
 Sumatra.
- 206 **Cranorrhinus corrugatus** (Temm.).
Buceros corrugatus, Temminck, Pl. Col. 531 (1832). Borneo.
- 207 **Rhytidoceros undulatus** (Shaw).
Buceros undulatus, Shaw, Gen. Zool. viii, p. 26 (1811). Java.
- 208 **Rhytidoceros subruficollis** (Blyth).
Buceros subruficollis, Blyth, Journ. Asiat. Soc. Bengal, xii, p. 177 (1843).
 Tenasserim.
- 209 **Anorrhinus galeritus** (Temm.).
Buceros galeritus, Temminck, Pl. Col. 520 (1824). Sumatra.
- 210 **Rhinoplax vigil** (Forst.).
Buceros vigil, Forster, Ind. Zool. p. 40 (1781). Tenasserim.
- 211 **Berenicornis comatus** (Raffles).
Buceros comatus, Raffles, Trans. Linn. Soc. xiii, p. 399 (1822). Sumatra.

FAMILY UPUPIDÆ.

- 212 **Upupa epops longirostris** Jerdon [*Upupa indica*].
Upupa longirostris, Jerdon, Birds of India, i, p. 393 (1862). Burma.

FAMILY MEROPIDÆ.

- 213 **Melittophagus e. erythrocephalus** (Gm.). [*Melittophagus Swinhott*].
Merops erythrocephalus, Gmelin, Syst. Nat. i, p. 463 (1788). Ceylon.
- 214 **Merops viridis** Linn. [*Merops sumatranus*].
Merops viridis, Linn. Syst. Nat. i, p. 182 (1766). Java.
- 215 **Merops superciliosus javanicus** Horsf. [*Merops philippinus*].
Merops javanicus, Horsf. Trans. Linn. Soc. xiii, p. 171 (1821). Java.
- 216 **Nyctiornis amicta** (Temm.).
Merops amictus, Temminck, Pl. Col. 310 (1824). Bencoolen, Sumatra.

FAMILY CAPRIMULGIDÆ.

- 217 **Caprimulgus macrurus bimaculatus**, Peale.
Caprimulgus bimaculatus, Peale, U. S. Exploring Expedn., 8, Mamm. and
 Ornith., page 170 (1848). Singapore.
- 218* **Caprimulgus a. affinis**, Horsf.
Caprimulgus affinis, Horsfield, Trans. Linn. Soc. xiii, p. 142 (1821). Java.

- 219 **Caprimulgus indicus jotaka**, Temm. and Schleg.
Caprimulgus jotaka, Temminck and Schlegel, Faun. Japon. Aves, p. 37,
 pl. 12 (1847). Japan.
- 220 **Caprimulgus pulchellus**, Salvad
Caprimulgus pulchellus, Salvad. Ann. Mus. Civ. Gen. xiv, p. 195 (1879).
 Padang, W. Sumatra.
- 221* **Caprimulgus concretus**, Bp.
Caprimulgus concretus, Bonaparte, Comp. Avium, i, p. 60 (1850).
 Ashantee; errone! substitute Borneo.
- 222 **Lyncornis temmincki**, Gould.
Lyncornis temminckii, Gould, Icon. Av. pt. 2 (1838). Borneo.

FAMILY APIDAE.

- 223 **Apus p. pacificus** (Lath.).
Hirundo pacificus, Lath. Ind. Orn. Suppl. p. 58 (1801). New South Wales.
- 224 **Apus subfurcatus** (Blyth).
Cypselus subfurcatus, Blyth, Journ. Asiat. Soc. Bengal xviii, p. 807 (1849).
 Penang.
- 225 **Tachornis battassiensis**, subsp. **infumata** (Sclat.).
Cypselus infumatus, Sclater, P. Z. S. p. 602 (1865). Borneo.
- 226 **Chætura giganteus** (Temm.).
Cypselus giganteus, Temminck, Pl. Col. 364 (1825). Java.
- 227 **Chætura cochinchinensis**, Oust.
Chaetura cochinchinensis, Oustalet, Bull. Soc. Philom. p. 52 (1878).
 Cochín-China.
- 228 **Chætura leucopygialis** (Blyth.).
Acanthylis leucopygialis, Blyth, Journ. Asiat. Soc. Bengal, xviii, p. 809
 (1849). Penang.
- 229 **Collocalia f. fuciphaga** (Thunb.).
Hirundo fuciphaga, Thunberg, Act. Holm. xxxiii, p. 151, pl. 4 (1772).
 Java.
- 230 **Collocalia v. vestita** (Less.).
Salangana vestita, Lesson, l'Eclat du Monde Savant, (2) viii, p. 134 (1843).
 Sumatra.
- 231* **Collocalia linchi cyanoptila**, Oberh.
Collocalia linchi cyanoptila, Oberholser, Proc. Acad. Nat. Sci. Philadelphia,
 p. 205 (1906). Bunguran, Natuna Ids.
- 232* **Collocalia l. oberholseri**, Stresem.
Collocalia linchi oberholseri, Stresemann, Nov. Zool. xix, p. 348 (1912).
 Pagi Islands, West Coast Sumatra.
- 233* **Collocalia l. dodgei**, Richm.
Collocalia dodgei, Richmond, Smithsonian Misc. Quarterly, ii, p. 431
 (1905). Mt. Kinabul, Borneo.
- 234 **Collocalia innominata**, Hume.
Collocalia innominata, Hume, Stray Feathers, i, p. 294 (1873). South
 Andaman Ids.
- 235 **Collocalia lowi** (Sharpe.).
Cypselus lowi, P. Z. S. p. 333 (1879). Labuan, Id., Borneo.
- 236 **Collocalia gigas**, Hart. & Butl.
Collocalia gigas, Hartert and Butler, Bull. Brit. Orn. Club, xi, p. 65
 (1901). S. Malay Peninsula.

- 237 **Hemiprocne longipennis harterti**, Streseman.
Hemiprocne longipennis harterti, Stresemann, Nov. Zool. xx, p. 339 (1913).
 N. E. Sumatra.
- 238 **Hemiprocne c. comata** (Temm.).
Cypselus comatus, Temminck, Pl. Col. 268 (1824). Sumatra.

ORDER TROGONIFORMES.

FAMILY TROGONIDAE.

- 239 **Pyrotrogon diardii sumatranus** (Blas.).
Harpactes diardi sumatranus, Blasius, Mitt. Geogr. Ges. Nat. Mus. Lubeck, ii, Reihe, Heft. x, p. 95 (1896). Sumatra.
- 240 **Pyrotrogon kasumba** (Raffl.).
Trogon kasumba, Raffles, Trans. Linn. Soc. iii, p. 282 (1822). Bencoolen, Sumatra.
- 241 **Pyrotrogon erythrocephalus flagrans**, (Müll.).
Trogon flagrans, Sal. Müller, Tijd. Nat. Ges. p. 338, pl. viii, fig. 2 (1835). Sumatra.
- 242 **Pyrotrogon duvaucelii** (Temm.).
Trogon duvaucelii, Temminck, Pl. Col. 291 (1837). Sumatra.
- 243 **Pyrotrogon oreskios uniformis**, Robinson.
Pyrotrogon oreskios uniformis, Robinson, Journ. Fed. Malay States Mus. vii, p. 149 (1917). Trang, Malay Peninsula.
- 244 **Pyrotrogon o. orrophaeus**, Cab. & Heine.
Pyrotrogon orrophaeus, Cabanis and Heine, Mus. Heineanum, iv, p. 156 note (1862). Malacca.
- 245 **Hapalarpactes reinwardti mackloti** (S. Müll.).
Trogon mackloti, Sal. Müller, Tijd. Nat. Gesch. p. 336, pl. iv, fig. 1 (1835). Sumatra.

ORDER CUCULIFORMES.

FAMILY CUCULIDAE.

- 246 **Clamator coromandus** (Linn.).
Cuculus coromandus, Linnaeus, Syst. Nat. i, p. 171 (1766). Coromandel Coast, India.
- 247 **Surniculus lugubris brachyurus**, Stresem.
Surniculus lugubris brachyurus, Stresemann, Nov. Zool., xx, p. 340 (1913). Pahang, Malay Peninsula.
- 248 **Hierococcyx bocki** (Wardl.-Rams.).
Hierococcyx bocki, Wardlaw Ramsay, Ibis, 1886, pp. 157-159. Sumatra.
- 249 **Hierococcyx f. fugax** (Horsf.).
Cuculus fugax, Horsfield, Trans. Linn. Soc. iii, p. 178 (1821). Java.
- 250 **Hierococcyx fugax nasicolor** (Hodgs.).
Cuculus nasicolor, Hodgs.; Blyth, Journ. Asiat. Soc. Bengal, xii, p. 943 (1843). Nepal.
- 251 **Hierococcyx sparveroides** (Vig.).
Cuculus sparveroides, Vigors, P. Z. S. p. 173 (1831). Himalayas.
- 252* **Cuculus micropterus concretus**, S. Müll.
Cuculus concretus, S. Müller, Veih, Nat. Ges., Land-en Volk. p. 236 (1845). Borneo.

- 253 **Cuculus canorus telephonus**, Heine.
Cuculus telephonus, Heine, Journ. f. Ornith., p. 352 (1863). Japan.
- 254* **Cuculus optatus**, Gould.
Cuculus optatus, Gould, P. Z. S. p. 18 (1845). N. Australia.
- 255 **Cuculus saturatus**, Hodgs.
Cuculus saturatus, Hodgs. Blyth. Journ. Asiat. Soc. Bengal, xii, p. 942 (1843). Nepal.
- 256 **Cuculus intermedius musicus**, Ljungh.
Cuculus musicus, Ljungh, K. Vet. Acad. Handl., xxiv, p. 309, t. vi (1804). Batavia, Java.
- 257 **Cacomantis merulinus threnodes**, Cab. and Heine.
Cacomantis threnodes, Cabanis and Heine, Mus. Hein., iv, p. 19 (1862). Malacca.
- 258 **Cacomantis sepulchralis sepulchralis** (S. Mull.).
Cuculus sepulchralis, S. Muller, Verh. Nat. Gesch. Land en Volkenk. p. 177 note (1839-44). Java.
- 259* **Penthoceryx sonnerati fasciolata**, S. Mull.
Cuculus fasciolatus, S. Muller, Verh. Nat. Gesch., Land en Volk. p. 177 (1843). Java and Sumatra. (Sumatra restricted).
- 260 **Chalcococcyx xanthorhynchus** (Horsf.).
Cuculus xanthorhynchus, Horsfield, Trans. Linn. Soc. xiii, p. 179 (1821). Java.
- 261 **Chalcococcyx maculatus** (Gm.).
Trogon maculatus, Gmelin. Syst. Nat. i, p. 404 (1788). Ceylon (errore). Substitute Pegu.
- 262 **Chalcococcyx basalis** (Horsf.).
Cuculus basalis, Horsfield, Trans. Linn. Soc. xiii, p. 179 (1821). Java.
- 263 **Eudynamis scolopacea malayana**, Cab. and Heine. [*Eudynamis honorata*].
Eudynamis malayana, Cab. and Heine, Mus. Hein. iv, p. 52 (1862). Sumatra.
- 264 **Centropus bengalensis javanensis** (Dumont).
Cuculus javanensis, Dumont. Dict.; Sci. Nat. xi, p. 144 (1818). Java.
- 265 **Centropus rectunguis**, Strickl.
Centropus rectunguis, Strickland P. Z. S. 1846 p. 104. Malacca.
- 266 **Centropus sinensis bubutus**, (Horsf.).
Centropus bubutus, Horsfield, Trans. Linn. Soc. xiii, p. 180 (1821). Java.
- 267 **Centropus nigrorufus** (Cuv.). [*Centropus purpureus*].
Cuculus nigrorufus, Cuvier, Regne Animl. i, p. 426 (1817). Java.
- 268 **Zanclostomus javanicus pallidus**, Rob. and Kloss.
Zanclostomus javanicus pallidus, Robinson and Kloss, Journ. Fed. Malay States, x, p. 203 (1921). Kedah, Malay Peninsula.
- 269 **Rhopodytes tristis elongatus** (S. Mull.).
Phenicophaeus elongatus, Sal. Muller, Tijds. Nat. Gesch. p. 342, pl. 9, fig. 1 (1835). Sumatra.
- 270 **Rhopodytes diardi** (Less.).
Melias diardi, Lesson, Traité, p. 132 (1831). Sumatra.
- 271 **Rhopodytes sumatranus** (Raffl.).
Cuculus sumatranus, Raffles, Trans. Linn. Soc. xiii, p. 287 (1822). Sumatra.

- 272 **Rhinortha c. chlorophæa** (Raffl.).
Cuculus chlorophæus, Raffles, Trans. Linn. Soc. xiii, p. 288 (1822).
 Sumatra.
- 273 **Phœnicophaes curvirostris erythrognaethus**, Bp.
Phœnicophaeus erythrognaethus, Bonaparte, Consp. Av. i, p. 98 (1850).
 Sumatra.
- 274 **Carpococcyx radiatus viridis**, Salvador.
Carpococcyx viridis, Salvador. Ann. Mus. Civ. Gen. xiv, p. 187 (1879).
 Sumatra.

ORDER PICIFORMES.

FAMILY INDICATORIDÆ.

- 275 **Indicator archipelagicus**, (Temm.).
Indicator archipelagicus, Temminck, Pl. Col. 542, fig. 2 (1832). Borneo.

FAMILY CAPITONIDÆ.

- 276 **Calorhamphus fuliginosa hayi** (J. E. Gray).
Bucco hayi, J. E. Gray, Zool. Misc. p. 33 (1832). Malacca.
- 277 **Chotorhea c. chrysopogon** (Temm.).
Bucco chrysopogon, Temminck, Pl. Col. iii, p. 285 (1824). Sumatra.
- 278* **Chotorhea rafflesii** (Less.). [*Chotorhea versicolor*].
Bucco rafflesii, Lesson, Rev. Zool. p. 137 (1839). Sumatra.
- 279 **Chotorhea m. mystacophanes** (Temm.).
Bucco mystacophanes, Temminck, Pl. Col. 315 (1824). Sumatra.
- 280 **Cyanops henricii** (Temm.).
Bucco henricii, Temminck, Pl. Col. 524 (1831). Sumatra.
- 281 **Cyanops o. oorti** (S. Mull.).
Bucco oorti, Sal. Muller, Nat. Gesch. en Phys. ii, p. 341, pl. 8, fig. 4
 (1835). Sumatra.
- 282 **Mesobucco d. duvauceli** (Less.).
Bucco duvauceli, Lesson, Traité, p. 164 (1831). Sumatra.
- 283* **Xantholaema haemacephala delica** (Parrot). [*Xantholaema
 haematocephala*].
Megalaema haemacephala delica, Parrot, Abh. K. Bayer. Akad. Wiss. ii, Kl.
 Bd. 24, 1 Abt. p. 169 (1907). Deli, Sumatra.
- 284 **Xantholaema rosea** (Dumont).
Bucco roseus, Dumont, Dict. Sci. Nat. iv, p. 52 (1806). Java.
- 285 **Psilopogon pyrolophus**, S. Mull.
Psilopogon pyrolophus, S. Muller, Tijds. Nat. Gesch. en Phys. ii, p. 339
 (1835). Sumatra.

FAMILY PICIDÆ.

- 286 **Picus canus dedemi**, Van Oort.
Gecinus dedemi, Van Oort. Notes Leyden Mus. xxxiv, p. 59 (1911).
 Battak Mts., Sumatra.
- 287 **Picus v. vittatus** (Vieill.).
Picus vittatus, Vieillot, Nouv. Dict. d'Hist. Nat. xxvi, p. 91 (1818). Java
 (Kloss).

- 288 **Picus puniceus observandus**, Hartert.
Gecinus puniceus observandus, Hartert, Nov. Zool. iii, p. 542 (1896).
Sumatra.
- 289 **Picus chlorolophus vanheysti** (Rob. & Kloss).
Brachylophus chlorolophus vanheysti, Robinson and Kloss, Journ. Straits
Branch Roy. Asiat. Soc., p. 97 (1919). N. E. Sumatra.
- 290 **Callolophus miniatus malaccensis** (Lath.).
Picus malaccensis, Latham, Ind. Orn. i, p. 241 (1790). Malacca.
- 291 **Chrysophlegma mentale humii**, Harg.
Chrysophlegma humii, Hargitt, Ibis, 1889, p. 231. Malacca.
- 292 **Chrysophlegma flavinucha mystacale**, Salvad.
Chrysophlegma mystacalis, Salvadori, Ann. Mus. Civ. Gen. xiv, p. 182
(1879). Sumatra.
- 293 **Chloropicoides r. rafflesii** (Vig.).
Picus rafflesii, Vigors, Mem. Raffl. App. p. 669 (1831). Sumatra.
- 294 **Dryobates a. analis** (Horsf.).
Picus analis, Horsfield, Zool. Res. Java (1824). Java.
- 295 **Dryobates m. moluccensis** Gm.). [*Iyngipicus auritus*].
Picus moluccensis, Gmelin, Syst. Nat. i, p. 439 (1788). Malacca (Ober-
holser).
- 296* **Dryobates canicapillus volzi**, Stresem.
Dryobates canicapillus volzi, Stresemann, Verh. Orn. Ges. Bayern, xiv,
p. 288 (1920). Laut Tawar, N. Sumatra.
- 297 **Blythipicus rubiginosus** (Swains). [*Leptocestes porphyromelas*].
Hemicercus rubiginosus, Swainson, Nat. Hist. Birds, W. Afr. ii, p. 150
(1837). Malacca (Hartlaub).
- 298 **Meiglyptes tristis micropterus**, Hesse.
Meiglyptes tristis micropterus, Hesse, Orn. Monats. 19, p. 182 (1911).
Borneo.
- 299 **Meiglyptes t. tukki** (Less.).
Picus tukki, Lesson, Rev. Zool. p. 167 (1839). Sumatra.
- 300 **Micropternus brachyurus badius** (Raffles.).
Picus badius, Raffles, Trans. Linn. Soc. xiii, p. 289 (1822). Sumatra.
- 301* **Dinopium j. javanense** (Ljungh).
Picus javanensis, Ljung, Mem. Acad. Roy. Stockh. p. 134, pl. vi (1797).
Java.
- 302 **Chrysocolaptes validus xanthopygius**, Finsch.
Chrysocolaptes xanthopygius, Finsch, Notes Leyden Mus. xxvi, p. 34 (1905).
Borneo.
- 303 **Chrysocolaptes guttacristatus chersonesus** Kloss.
Chrysocolaptes strictus chersonesus, Kloss, Ibis, p. 113 (1918). Johore.
- 304 **Hemicercus concretus coccometopus** (Reichenb.).
Hemicercus coccometopus, Reichenbach, Scans. Picinae, p. 401, pl. DCLVI,
figs. 4364-5 (1854). Sumatra.
- 305 **Thriponax j. javensis** (Horsf.).
Picus javensis, Horsfield, Trans. Linn. Soc. xiii, p. 175 (1821). Java.
- 306 **Mulleripicus p. pulverulentus** (Temm.).
Picus pulverulentus, Temminck, Pl. Col. 389 (1826). Java (Stresemann).

- 307 **Sasia a. abnormis** (Temm.).
Picumnus abnormis, Temminck, Pl. Col. 371, fig. (1825). Java.
- 308 **Picumnus innominatus malayorum**, Hartert.
Picumnus innominatus malayorum, Hartert, Vog. Palaarkt. Faun. Heft VII, p. 937 (1912). Perak, Malay Peninsula.

ORDER EURYLAIMIFORMES.

FAMILY EURYLAIMIDÆ.

- 309 **Calyptomena v. viridis**, Raffles.
Calyptomena viridis, Raffles, Trans. Linn. Soc. xiii, p. 295 (1822). Sumatra.
- 310 **Psarisomus dalhousiæ psittacinus** (S. Mull.).
Eurylaimus psittacinus, Sal. Muller, Tijds. Nat. Gesch. ii, p. 349, pl. V, fig. 6 (1835). Sumatra.
- 311 **Serilophus lunatus intensus**, Rob. and Kloss.
Serilophus lunatus intensus, Robinson and Kloss, Journ. Fed. Malay States Mus., viii, pt. 2, p. 150 (1918). Korinchi, Sumatra.
- 312 **Eurylaimus javanicus harterti**, Van Oort.
Eurylaimus javanicus harterti, Van Oort, Notes Leyden Mus. xxxi, p. 209 (1909). Deli District, N. E. Sumatra.
- 313 **Eurylaimus j. javanicus**, Horsf.
Eurylaimus javanicus, Horsfield, Trans. Linn. Soc. xiii, p. 170 (1821). Java.
- 314 **Eurylaimus o. ochromalus**, Raffl.
Eurylaimus ochromalus, Raffles, Trans. Linn. Soc. xiii, p. 297 (1822). Singapore Id. (Robinson and Kloss).
- 315 **Corydon s. sumatranus** (Raffl.).
Coracias sumatranus, Raffles, Trans. Linn. Soc. xiii, p. 303 (1822). Bencoolen, Sumatra.
- 316 **Cymborhynchus macrorhynchus lemniscatus** (Raffles.).
Eurylaimus lemniscatus, Raffles, Trans. Linn. Soc. xiii, p. 296 (1822). Bencoolen, Sumatra.

ORDER PASSERIFORMES.

FAMILY PITTIDÆ.

- 317 **Pitta cyanoptera**, Temm.
Pitta cyanoptera, Temminck, Pl. Col. 218 (1823). Java.
- 318 **Pitta megarhyncha** Schl.
Pitta megarhyncha, Schlegel, Vog. Ned. Ind., Mon. I, Pitta, p. 32, pl. 4, fig. 2 (1863). Banka Id.
- 319 **Pitta v. venusta**, S. Mull.
Pitta venusta, Sal. Muller, Tijds. Nat. Gesch. ii, p. 348, pl. 9, fig. 4 (1835). Sumatra.
- 320 **Pitta granatina vanheurni** Kloss.
Pitta granatina vanheurni, Kloss Journ. Fed. Malay States Mus. x, p. 212 (1921). N. E. Sumatra.
- 321* **Pitta sordida cucullata**, Hartl.
Pitta cucullata, Hartlaub, Rev. Zool. p. 65 (1843). Malacca.

- 322 **Pitta c. cærulea** (Raffles.).
Myiothera cærulea, Raffles, Trans. Linn. Soc. xiii, p. 301 (1822) Ben-
 coolen, Sumatra.
- 323 **Pitta schneideri**, Hartert
Pitta schneideri, Hartert, Bull. Brit. Orn. Club, xxv, pp. 9, 10 (1909).
 Battak, Mts., Sumatra.
- 324 **Eucichla cyanura irena** (Temm.). [*Pitta boschi*.]
Pitta irena, Temminck, Pl. Col., livr. 100 (1836). North Sumatra.

FAMILY HIRUNDINIDÆ.

- 325 **Hirundo rustica gutturalis** (Scop.).
Hirundo gutturalis, Scopoli, Del. Flor. et Faun. Insubr. ii, p. 96 (1786).
 Panay, Philippines.
- 326 **Hirundo j. javanica**, Sparrman.
Hirundo javanica, Sparrman, Mus. Carls. ii, pl. 100 (1789). Java.

FAMILY MUSCICAPIDÆ.

- 327 **Hemichelidon ferruginea**, Hodgs.
Hemichelidon ferruginea, Hodgs. P. Z. S. 1845, p. 32. Nepal.
- 328* **Hemichelidon sibirica** (Gm.)
Muscicapa sibirica Gmelin, Syst. Nat. 1, p. 936 (1788). Lake Baical.
- 329 **Alseonax latirostris** (Raffl.).
Muscicapa latirostris, Raffles, Trans. Linn. Soc. xiii, p. 312 (1822).
 Sumatra.
- 330 **Cyornis c. concreta** (S. Mull.).
Muscicapa concreta, Sal. Muller, Tijds. Nat. Gesch. and Phys. ii, p. 351
 (1835). Sumatra.
- 331 **Cyornis vanheysti** Rob. & Kloss.
Cyornis vanheysti, Robinson and Kloss, Journ. Straits Branch Roy. Asiatic
 Soc. No. 80, p. 104 (1919). N. E. Sumatra.
- 332 **Cyornis unicolor infuscata**, Hartert.
Cyornis unicolor infuscata, Hartert, Nov. Zool. ix, p. 550 (1902). Java.
- 333 **Cyornis sumatrensis** (Sharpe.)
Siphia sumatrensis, Sharpe, Cat. Birds Brit. Mus., iv, p. 451 (1879).
 Malacca (Hartert).
- 334* **Cyornis e. elegans** (Temm.).
Muscicapa elegans, Temminck, Pl. Col. 596, fig. 1. (1836). W. Sumatra.
- 335 **Cyornis r. rufigaster** (Raffl.).
Muscicapa rufigaster, Raffles, Trans. Linn. Soc. xiii, p. 312 (1822). Ben-
 coolen, W. Sumatra.
- 336* **Cyornis** sp.
 Ophir District, W. Sumatra.
- 337 **Nitidula hodgsoni sondaica** Rob. & Kloss.
Nitidula hodgsoni sondaica, Robinson and Kloss, Journ. Fed. Malay States
 Mus. xi, p. 54 (1923). Korinchi, Sumatra.
- 338 **Anthipes s. solitaria** (Müll.).
Erythrosteria solitaria, Sal. Muller, Tijds. Nat. Gesch. p. 351 (1835).
 Padang, W. Sumatra.

- 339 **Niltava vivida sumatrana**, Salvad.
Niltava sumatrana, Salvadori, Ann. Mus. Civ. Gen. xiv, p. 201 (1879).
Padang, W. Sumatra.
- 340 **Niltava grandis decipiens** (Salvad.).
Niltava decipiens, Salvadori, Ann. Mus. Civ. Gen. (2) xii, p. 49 (1891).
Battak Lands, Sumatra.
- 341 **Muscitrea g. grisola** (Blyth.).
Tephrodornis grisola, Blyth; Journ. Asiat. Soc. Bengal, xii, p. 180 (1843).
Calcutta.
- 342 **Erythromyias dumetoria muelleri** (Temm.).
Muscicapa muelleri, Temminck, MS.; Blyth, Ibis, 1870, p. 166. Sumatra.
- 343 **Poliomyias mugimaki** (Temm.). [*Poliomyias luteola*].
Muscicapa mugimaki, Temminck, Pl. Col., 577, fig. 2 (1835). Japan.
- 344 **Dendrobiastes hyperythra malayana** (Ogilvie Grant).
Muscicapula malayana, Ogilvie Grant, Bull. Brit. Orn. Club, xix, p. 10
(1906). Mt. Tahan, Malay Peninsula.
- 345 **Muscicapula melanoleuca westermanni**, Sharpe. [*Muscicapula maculata*.]
Muscicapula westermanni, Sharpe, P. Z. S. 1888, p. 270. Perak, Malay
Peninsula.
- 346 **Gerygone m. modiglianii**, Salvad.
Gerygone modiglianii, Salvadori, Ann. Mus. Civ. Gen. (2) xii, p. 52 (1891).
Battak Lands, Sumatra.
- 347 **Cyanoptila cyanomelana cumatilis** Phayer and Bangs.
Cyanoptila cyanomelana cumatilis Thayer and Bangs, Bull. Mus. Comp.
Zool. Harvard, lii, p. 141 (1909). Hupeh, China.
- 348* **Zanthopygia narcissina xanthopygia** (Hay). [*Xanthopygia
tricolor*.]
Muscicapa xanthopygia, Hay, Madras Journ. xiii, p. 162 (1844-5).
Malacca.
- 349 **Hypothymis azurea prophata**, Oberhsr. [*Hypothymis occi-
pitalis*.]
Hypothymis azurea prophata, Oberholster, Proc. U. S. Nat. Mus. 39, p. 597
(1911). Karimon Id. near Singapore.
- 350* **Rhipidura albicollis atrata**, Salvad.
Rhipidura atrata, Salvadori, Ann. Mus. Civ. Gen. xiv, p. 203 (1879).
Padang Residencies, W. Sumatra.
- 351 **Rhipidura perlata**, S. Mull.
Rhipidura perlata, Sal. Muller, Nat. Gesch. Land-en Volken, p. 185 (1835).
Sumatra.
- 352* **Rhipidura euryura**, Sal. Müller, Nat. Gesch., Land-en Volken,
p. 185 (note) 1835. Java.
- 353 **Rhipidura j. javanica** (Sparrm.).
Muscicapa javanica, Sparrman, Mus. Carls. iii, pl. 75 (1789). Java.
- 354 **Terpsiphone paradisi affinis** (Hay).
Tchitrea affinis, A. Hay, MS., Blyth, Journ. Asiat. Soc. Bengal, xv, p. 292
(1846). Malay Peninsula.
- 355 **Terpsiphone paradisi incii** (Gould).
Muscipeta incii, Gould, B. Asia, II, pl. 19 (1852). Shanghai.

- 356 **Terpsiphone a. atrocaudata** (Eyton.) [*Terpsiphone princeps*.]
Muscipeta atrocaudata, Eyton, P. Z. S., p. 102 (1839). Malay Peninsula.
- 357 **Drymophila velata caesia** Less.
Monarchia caesia Lesson, Rev. Zool., p. 167 (1839). Sumatra.
- 358 **Drymophila p. pyrrhoptera** (Temm.).
Muscicapa pyrrhoptera, Temminck, Pl. Col. 596, fig. 2. (1836). Borneo.
- 359* **Rhinomyias umbratilis infusca** (Blyth) [*Rhinomyias pectoralis*
and *Siphia albo-olivacea*.]
Muscicapa infusca Blyth, Ibis, p. 165 (1870). Sumatra.
- 360* **Rhinomyias olivacea** (Hume.)
Cyornis olivacea, Hume, Stray Feathers, v, p. 338 (1877). S. Tenasserim.
- 361 **Culicicapa c. ceylonensis** (Swains.).
Platyrrhynchus ceylonensis, (Swains.). Zool. Illustr. i, p. 13 (1838). Ceylon.
- 362 **Abrornis superciliaris schwaneri** (Temm.)
Abrornis schwaneri, (Temm.): Blyth, Ibis, p. 169 (1870). Borneo.
- 363 **Cryptolopha trivirgata trivirgata** (Strickl.).
Phylloscopus trivirgatus, Strickland, Contrib. Ornith. 1840, p. 123, pl. 34.
Java.
- 364 **Cryptolopha grammiceps sumatrensis**, Rob. and Kloss.
Cryptolopha sumatrensis, Robinson and Kloss, Journ. Fed. Malay States
Mus. viii, pt. 2, p. 165. (1918). Korinchi Sumatra.
- 365 **Cryptolopha muelleri**, Robinson and Kloss.
Cryptolopha muelleri, Robinson and Kloss, Journ. Fed. Malay States
Mus. viii, pt. 2, p. 167. (1918). Korinchi, Sumatra.
- 366 **Cryptolopha montis inornata**, Rob. and Kloss.
Cryptolopha montis inornata, Robinson and Kloss, Journ. Straits Branch,
Roy. Asiat. Soc., 81, p. 99 (1920). N. E. Sumatra.
- 367* **Stoporala indigo ruficrissa**, Salvad.
Stoporala ruficrissa, Salvadori, Ann. Mus. Civ. Gen. xiv, p. 202 (1879).
Padang, Sumatra.
- 363* **Stoporala thalassina thalassoides**, (Cab.). [*Stoporala thalassin-*
oides.]
Glaucomyias thalassoides, Cabanis, Mus. Hein. Th. 1, p. 53, note (1857).
Sumatra.

FAMILY CAMPEPHAGIDÆ.

- 369* **Coracina s. sumatrensis** (S. Mull.).
Cebilepyris sumatrensis, Sal. Muller, Verh. Nat. Gesch. Land-en Volkenk.
p. 191 (1843). Sumatra.
- 370* **Coracina personata melanocephala** (Salvad.)
Graucalus melanocephalus, Salvadori, Ann. Mus. Civ. Gen. xiv, p. 206 (1879).
Padang Highlands, Sumatra.
- 371 **Lalage fimbriata culminata** (A. Hay.)
Cebilepyris culminatus, A. Hay, Madras Journ. xiii, p. 157 (1846). Malacca.
- 372 **Lalage n. nigra** (Forst.). [*Lalage terat.*]
Turdus niger, Forster, Ind. Zool., p. 41 (1781). India.
- 373 **Pericrocotus speciosus xanthogaster** (Raffl.).
Lanius xanthogaster, Raffles, Trans. Linn. Soc. xiii, p. 309 (1822). Ben-
coolen, Sumatra.

- 374* **Pericrocotus cinnamomeus saturatus** Baker.
Pericrocotus peregrinus saturatus, Baker, Bull. Brit. Orn. Club, xl, p. 115 (1920). W. Java
- 375 **Pericrocotus montanus**, Salvad.
Pericrocotus montanus, Salvadori, Ann. Mus. Civ. Gen. xiv, p. 205 (1879). Padang Highlands, Sumatra.
- 376 **Pericrocotus igneus**, Blyth.
Pericrocotus igneus, Blyth, Journ. Asiat. Soc. Bengal, xv, p. 309 (1846). Malacca.
- 377 **Pericrocotus miniatus** (Temm.).
Muscicapa miniata, Temminck, Pl. Col. 156 (1825). Java.
- 378 **Pericrocotus c. cinereus**, Lafr.
Pericrocotus cinereus, Lafresnaye, Rev. Zool. viii, p. 94 (1845). Luzon, Philippines.

FAMILY PYCNONOTIDAE.

- 379 **Aegithina viridissima** (Bp.).
Iora viridissima, Bonaparte, Consp. Av. i, p. 397 (1850). Sumatra.
- 380 **Aegithina tiphia viridis** (Bp.).
Iora viridis, Bonaparte, Consp. Av. i, p. 397 (1850). Borneo.
- 381 **Chloropsis viridis zosterops**, Vig.
Chloropsis zosterops, Vigors, App. Mem. Life Raffl. p. 674 (1847). Sumatra.
- 382 **Chloropsis media** (Bp.).
Phyllornis media, Bonaparte, Consp. Av. i, p. 396 (1850). Sumatra.
- 383 **Chloropsis i. icterocephala** (Less.).
Phyllornis icterocephalus Lesson, Rev. Zool., p. 164 (1840). Palembang, Sumatra
- 384 **Chloropsis c. cyanopogon** (Temm.).
Phyllornis cyanopogon, Temminck, Pl. Col. 512, fig. 1 (1829). Sumatra.
- 385 **Chloropsis venusta** (Bp.).
Phyllornis venusta, Bonaparte, Consp. Av. i, p. 396 (1850). Sumatra.
- 386 **Irena puella crinigera**, Sharpe.
Irena criniger, Sharpe, Cat. Birds Brit. Mus. iii, p. 267 (1877). Borneo.
- 387* **Ixos c. cinereus** (Blyth).
Iole cinerea, Blyth, Journ. Asiat. Soc. Bengal, xiv, p. 573 (1845). Malacca.
- 388 **Ixos malaccensis** (Blyth).
Hypsipetes malaccensis, Blyth, Journ. Asiat. Soc. Bengal, xiv, p. 574 (1845). Malacca.
- 389 **Ixos virescens sumatranus**, Wardl.-Rams.
Hemixus sumatranus, Wardlaw-Ramsay, Ann. and Mag. Nat. Hist. (5), p. 431 (1882). Sumatra.
- 390* **Iole o. olivacea**, Blyth.
Iole olivacea, Blyth, Journ. Asiat. Soc. Bengal, xiii, p. 386 (1842). Singapore.
- 391 **Euptilosus euptilosus** (Jard. and Selby).
Brachyptus euptilosus, Jard. and Selby, Ill. Orn. iv (n. s.) iii, (1825) Singapore.

- 392 **Brachypodius a. atriceps** Temm. [*Micropus melanocephalus*].
Turdus atriceps, Temminck, Pl. Col. 147 (1822). Java (Robinson and Kloss).
- 393 **Microtarsus melanoleucus**, Eyton.
Microtarsus melanoleucus, Eyton P. Z. S. p. 102 (1839). Malacca.
- 394 **Criniger gularis tephrogenys** (J. and S.)
Trichophorus tephrogenys, Jardine and Selby., Ill. Orn., pl. 127 (1833).
Malacca (Hartert).
- 395 **Criniger gutturalis sumatranus**, Wardl.-Rams.
Criniger sumatranus, Wardlaw-Ramsay, Ann. and Mag. Nat. Hist. (5),
p. 431 (1882). Sumatra.
- 396 **Criniger finschi** Salvad.
Criniger finschii, Salvadori, Atti R. Acad. Torini, vi, p. 128 (1871).
Borneo.
- 397 **Alophoixus p. phaeocephalus** (Hartl.).
Ixos (Trichixos) phaeocephalus, Hartlaub, Rev. Zool. 1844, p. 401.
Malacca.
- 398* **Tricholestes criniger sericea** (S. Mull.).
Criniger sericea, S. Muller in Blyth, Ibis, p. 48 (1865). West Coast,
Sumatra.
- 399 **Alcurus striatus leucogrammicus** (S. Mull.).
Pycnonotus leucogrammicus, Sal. Muller, Tijds. Nat. Gesch. Nederl. Ind.
p. 362 (1835). Sumatra.
- 400 **Trachycomus zeylanicus** (Gm.). [*Trachycomus ochrocephalus*.]
Sturnus zeylanicus, Gmelin, Syst. Nat. i, 804 (1788). Ceylon (errore) sub-
stitute Java.
- 401 **Pycnonotus goiaver analis** (Horsf.).
Turdus analis, Horsfield, Trans. Linn. Soc. xiii, p. 147 (1821). Java.
- 402 **Pycnonotus p. plumosus** Blyth.
Pycnonotus plumosus, Blyth, Journ. Asiat. Soc. Bengal, xiv, p. 567 (1845).
Singapore
- 403 **Pycnonotus b. brunneus** (Blyth). [*Pycnonotus simplex*.]
Pycnonotus brunneus, Blyth, Journ. Asiat. Soc. Bengal, xiv, p. 568 (1845).
Malacca.
- 404 **Pycnonotus s. simplex** (Less.).
Pycnonotus simplex, Lesson, Rev. Zool. 11, p. 167 (1839). Sumatra.
- 405 **Pycnonotus erythrophthalmos cyanochrus**, Oberholser.
[*Pycnonotus pusillus*.]
Pycnonotus erythrophthalmos cyanochrus, Oberholser, Smithsonian Misc. Coll.
Vol. 60, No. 7, p. 10 (1912). Sumatra.
- 406 **Pycnonotus bimaculatus barat** Robinson and Kloss.
Pycnonotus bimaculatus barat, Robinson and Kloss, Journ. Straits Branch
Roy. Asiat. Soc. 81, p. 103 (1920). Sumatra.
- 407 **Pycnonotus c. cyaniventris** (Blyth).
Pycnonotus cyaniventris, Blyth, Journ. Asiat. Soc. Bengal, xi, p. 792 (1842).
Singapore.
- 408* **Molpastes a. aurigaster** (Vieill.).
Turdus aurigaster, Vieillot Nouv. Dict. d'Hist. Nat. xx, p. 258 (1819).
Java.

- 409 **Bonapartia tigus** (Bp.). [*Pycnonotus tigus*].
Brachyphus tigus, Bonaparte, Consp. Av. i, p. 264 (1850). Sumatra.
- 410 **Otocompsa emeria peguensis** Baker.
Otocompsa emeria peguensis, Baker, Fauna Brit. Ind. Birds, Ed. 2, 1, p. 396 (1922) Pegu.
- 411 **Rubigula d. dispar** (Horsf.).
Turdus dispar, Horsfield, Trans. Linn. Soc. xiii, p. 150 (1821). Java.
- 412 **Rubigula squamata webberi** (Hume).
Ixidia webberi, Hume, Stray Feath., viii, pp. 40, 63 (1879). N. Malay Peninsula.

FAMILY TIMALIIDÆ.

- 413 **Eupetes m. macrocerus** (Temm.).
Eupetes macrocerus, Temminck, Pl. Col. 516 (1831). Sumatra.
- 414 **Pomatorhinus montanus occidentalis** Rob. and Kloss. [*Pomatorhinus borneensis*].
Pomatorhinus montanus occidentalis, Robinson and Kloss, Journ. Fed. Malay States Mus. xi, p. 54 (1923). S. Malay Peninsula.
- 415 **Garrulax leucolophus bicolor**, Hartl.
Garrulax bicolor, Harlaub, Rev. Zool. p. 402 (1844). Sumatra.
- 416 **Garrulax p. palliatus** (Bp.).
Ianthocincla palliata, Bonaparte, Consp. Av. i, p. 371 (1850). Sumatra.
- 417 **Melanocichla lugubris** (S. Mull.).
Ianthocincla lugubris, Sal. Muller, Nat. Tijd. Nederl. Ind. p. 344, pl. 5, fig. 2 (1835). Sumatra.
- 418 **Rhinocichla m. mitrata** (S. Mull.).
Timalia mitrata, Sal. Muller, Nat. Tijd. Nederl. Ind. p. 345, pl. 5, fig. 3 (1835). Sumatra.
- 419 **Ophrydornis a. albigularis** (Blyth).
Setaria albigularis, Blyth, Journ. Asiat. Soc. Benal, xiii, p. 385 (1844). Singapore.
- 420 **Malacocincla abbotti olivacea** (Strickl.).
Malacopteron olivaceum, Strickland, Ann. and Mag. Nat. Hist. xix, p. 132 (1847). Malacca.
- 421 **Malacocincla sepiaria barussana** Rob. and Kloss.
Malacocincla sepiaria barussana, Robinson and Kloss, Journ. Fed. Malay States Mus. x, p. 205 (1921). Korinchi, Sumatra.
- 422 **Turdinus macrodactylus lepidopleurus** Temminck.
Myiothera lepidopleura, Temm. in Bp. Consp. Avium, p. 257 (1850). Java.
- 423 **Turdinus rufipectus**, Salvad.
Turdinus rufipectus, Salvadori, Ann. Mus. Civ. Gen. xiv, p. 224 (1879) Sumatra.
- 424 **Turdinus loricatus** (S. Mull.).
Myiothera loricata, Sal. Muller, Nat. Tijd. Gesch. Nederl. Ind. p. 34 (1835). Sumatra.
- 425 **Erythrochichla b. bicolor** (Less.).
Brachypteryx bicolor, Lesson, Rev. Zool. p. 138 (1839). Sumatra.
- 426 **Drymocataphus capistratus nigrocapitatus** (Eyton).
Brachypteryx nigro-capitata, Eyton, P. Z. S. 1839, p. 103. Malacca.

- 427 **Aethostoma r. rostratum** (Blyth).
Trichostoma rostratum, Blyth, Journ. Asiat. Soc. Bengal, xi, p. 795 (1842).
Malacca.
- 428 **Aethostoma buttikoferi** (Vorderm).
Trichostoma buttikoferi Vorderman, Nat. Tijdschr. Ned. Indie, p. 230
(1892). Lampongs, Sumatra
- 429 **Horizillas magna** (Eyton).
Malacopteron magnum, Eyton, P. Z. S., p. 103 (1839). Malacca.
- 430* **Horizillas c. cinerea** (Eyton).
Malacopteron cinereus, Eyton, P. Z. S., p. 103 (1839). Malacca.
- 431 **Horizillas m. magnirostris** (Moore.)
Alcippe magnirostris, Moore, P. Z. S., p. 277 (1854). Malacca.
- 432 **Horizillas affinis** (Blyth).
Trichostoma affine, Blyth, Journ. Asiat. Soc. Bengal, xi, p. 795 (1842).
Singapore.
- 433 **Anuropsis m. malaccensis** (Hartl.).
Brachypteryx malaccensis, Hartlaub, Rev. Zool. 1844, p. 402. Malacca.
- 434 **Turdinulus epilepidotus dilutus** Rob. and Kloss.
Turdinulus epilepidotus dilutus, Robinson and Kloss, Journ. Straits Branch,
Roy. Asiat. Soc. 73, p. 276 (1916). Korinchi, Sumatra.
- 435 **Rimator albostratus**, Salvad.
Rimator albostratus, Salvadori, Ann. Mus. Civ. Gen. xiv, p. 224 (1879).
Padang Highlands, Sumatra.
- 436* **Alcippe cinerea**, Blyth.
Alcippe cinerea, Blyth, Journ. Asiat. Soc. Bengal, xiii, p. 384 (1844).
Malacca.
- 437 **Stachyris nigriceps larvata** (Bp.).
Timalia larvata, Bonaparte, Consp. Av. i, p. 217 (1850). Sumatra.
- 438 **Stachyris p. poliocephala** (Temm.).
Timalia poliocephala, Temminck, Pl. Col. 593, fig. 2 (1836). Sumatra.
- 439 **Stachyris nigricollis** (Temm.).
Timalia nigricollis, Temminck, Pl. Col. 594, fig. 2 (1836). Borneo.
- 440 **Stachyris maculata pectoralis** (Blyth)
Timalia pectoralis, Blyth, Journ. Asiat. Soc. Bengal, xi, p. 793 (1842).
Malacca.
- 441 **Thringorhina s. striolata** (S. Mull.).
Timalia striolata, Sal. Muller, Tijd. Nat. Gesch, p. 32 (1838). Padang
Residencies, W. Sumatra.
- 442 **Thringorhina s. umbrosa** Kloss.
Thringorhina striolata umbrosa, Kloss, Journ. Fed. Malay States Mus. x,
p. 212 (1921). Langkat, N. E. Sumatra.
- 443 **Thringorhina t. thoracica** (Temm.).
Pitta thoracica, Temminck, Pl. Col. 76 (1823). West Java.
- 444 **Stachyridopsis chrysaea bocagei** (Salvad).
Stachyris bocagei, Salvadori, Ann. Mus. Civ. Gen. xiv, p. 223 (1879).
Padang Highlands, Sumatra.
- 445 **Stachyridopsis poliogaster** (Hume).
Stachyris poliogaster, Hume, Stray Feathers, ix, p. 116 (1880). Johore,
S. Malay Peninsula.

- 446 **Cyanoderma e. erythroptera** (Blyth).
Timalia erythroptera, Blyth, Journ. Asiat. Soc. Bengal, xi, p. 794 (1842).
Malacca
- 447 **Mixornis flavicollis** (?) **frigida** (Hartl.).
Zosterops (*Heleia*) *frigida*, Sal. Müller, Ms.; Hartlaub, Journ. fur. Ornith.
p. 27 (1865). Sumatra.
- 448 **Mixornis rubricapilla sumatrana**, Bp. [*Mixornis gularis*.]
Mixornis sumatranus, Bonaparte, Consp. i, p. 217 (1850). Sumatra.
- 449 **Kenopia striata** (Blyth).
Timalia striata, Blyth, Journ. Asiat. Soc. Bengal, xi, p. 793 (1842).
Singapore.
- 450 **Macronus p. ptilosus**, Jard. and Selby.
Macronus ptilosus, Jard. and Selby, Illustr. Orn. pl. 150 (1835). Sumatra.
- 451 **Myiophoneus flavirostris dicrorhynchus**, Salvad.
Myiophoneus dicrorhynchus, Salvadori, Ann. Mus. Civ. Gen. xiv, p. 227
(1879). Padang District, Sumatra.
- 452 **Arrenga castanea**, (Wardl.-Rams).
Myiophoneus castaneus, Wardlaw-Ramsay, P. Z. S. (1880). Sumatra.
- 453 **Arrenga glaucina melanura**, Salvad.
Arrenga melanura Salvadori, Ann. Mus. Civ. Gen. xiv, p. 227 (1879).
Padang Highlands, Sumatra.
- 454* **Brachypteryx montana saturata**, (Salvad.).
Brachypteryx saturata, Salvadori, Ann. Mus. Civ. Gen. xiv, p. 225 (1879).
Padang Highlands, Sumatra.
- 455 **Heteroxenicus leucophris** (Temm.).
Myiothera leucophris, Temminck, Pl. Col. 448, fig. 1 (1827). Java.
- 456 **Sibia picaoides simillima** (Salvad.).
Heterophasia simillima, Salvadori, Ann. Mus. Civ. Gen. xiv, p. 232 (1879).
Padang Highlands, Sumatra.
- 457 **Mesia argentaurea laurinae** (Salvad.).
Leiothrix laurinae, Salvadori, Ann. Mus. Civ. Gen. xiv, p. 231 (1879).
Padang Highlands, Sumatra.
- 458 **Pteruthius a. aenobarbus** (Temm.).
Allotrius aenobarbus, Temm. Pl. Col. 589, fig. 2 (1835). Java.
- 459 **Pteruthius flaviscapis cameranoi**, Salvad.
Pteruthius cameranoi, Salvadori, Ann. Mus. Civ. Gen. xiv, p. 232 (1879).
Padang Highlands, Sumatra.

FAMILY TROGLODYTIDAE.

- 460 **Pnoepyga pusilla lepida**, Salvad.
Pnoepyga lepida, Salvadori, Ann. Mus. Civ. Gen. xiv p. 226 (1879). Padang
Highlands, Sumatra.

FAMILY TURDIDAE.

- 461 **Cochoa beccarii**, Salvad.
Cochoa beccarii, Salvadori Ann. Mus. Civ. Gen. xiv, p. 228 (1879).
Padang Highlands, Sumatra.
- 462 **Monticola solitaria pandoo** (Sykes) [*Monticola cyanea*].
Petrocincla pandoo, Sykes, P. Z. S., p. 87 (1832). Deccan, India.

- 463 **Turdus o. obscurus** (Gm.).
Turdus obscurus, Gmelin, Syst. Nat. i, p. 816 (1788). Siberia.
- 464 **Turdus javanicus indrapuræ**, Rob and Kloss.
Turdus indrapuræ, Robinson and Kloss, Journ. Straits Branch. Roy. Asiat. Soc., 73, p. 277 (1916). Korinchi, Sumatra.
- 465 **Geocichla interpres** (Kuhl.).
Turdus interpres, Kuhl in Temminck, Pl. Col. 458 (1828). Java.
- 466* **Geocichla c. citrina** (Lath.).
Turdus citrinus, Latham, Md. Orn. 1, p. 350 (1790). India.
- 467 **Zoothera andromedæ** (Temm.).
Myiothra andromedæ, Temminck, Pl. Col. 392 (1826). Java.
- 468 **Cichloselys sibirica davisoni** (Hume.).
Turdulus davisoni, Hume, Stray Feathers, v, p. 63 (1877). Muleyit Mt. Tenasserim.
- 469 **Oreocinclæ aureus horsfieldi** (Bp.).
Oreocinclæ horsfieldi, Bonaparte, Rev. et Mag. Zool. p. 205 (1857). Java.
- 470 **Henicurus ruficapillus**, Temm.
Enicurus ruficapillus, Temminck, Pl. Col. 534 (1832). Sumatra.
- 471 **Henicurus velatus sumatranus** Rob. and Kloss.
Henicurus velatus sumatranus, Robinson and Kloss, Journ. Fed. Malay States Mus., XI, p. 56 (1923). Korinchi, Sumatra.
- 472 **Henicurus frontalis**, Blyth.
Enicurus frontalis, Blyth, Journ. Asiat. Soc. Bengal, xvi, p. 156 (1847). Malay Peninsula.
- 473 **Larvivora c. cyane** (Pall.).
Motacilla cyane, Pallas, Reis. Russ. Reichs. iii, p. 697 (1776). Dauria.
- 474 **Notodela diana sumatrana**, Robinson and Kloss.
Notodela diana sumatrana, Robinson and Kloss, Journ. Fed. Malay States Mus., viii, pt 2, p. 215 (1918). Korinchi, Sumatra.
- 475 **Copsychus saularis musicus** (Raffl.).
Lanius musicus, Raffles, Trans. Linn. Soc. xiii, p. 147 (1822). Bencoolen, Sumatra.
- 476 **Kittacinclæ malabarica tricolor** (Vieill.).
Turdus tricolor, Vieillot, Nouv. Dict. d'Hist. Nat. xxx, p. 291 (1818). Java (Robinson and Kloss).
- 477 **Trichixos pyrropyga** Less.
Trichixos pyrropyga, Lesson, Rev. Zool., p. 167 (1839). Sumatra.

FAMILY SYLVIIDÆ.

- 478 **Acrocephalus arundinaceus orientalis** (Temm. and Schleg.).
Salicaria turdina orientalis, Temminck and Schlegel, Faun. Japon. Aves, p. 50 (1847). Japan.
- 479 **Locustella lanceolata** (Temm.).
Sylvia lanceolata, Temminck, Man. d'Orn. iv, p. 614 (1840). Russia.
- 480 **Locustella certhiola** (Pall.).
Motacilla certhiola Pallas, Zoogr. Rosso-Asiat. 1, p. 509 (1827). Baical Siberia.

- 481 **Cettia montana sumatrana**, O. Grant.
Cettia sumatrana, O. Grant, Bull. Brit. Orn. Club, xxxvi, p. 66 (1916).
Korinchi, Sumatra.
- 482 **Sutoria sutoria edela** (Temm.)
Orthotomus edela Temminck, Pl. Col. 599 fig. 2 (1836). Java
- 483 **Orthotomus atrogularis**, Temm.
Orthotomus atrogularis, Temminck, Pl. Col. text to livr. 101 (1836).
Malacca.
- 484 **Orthotomus ruficeps** (Less.).
Edela ruficeps, Lesson, Traite d' Orn. p. 309 (1831). N. W. Australia
(errore): substitute Sumatra.
- 485* **Orthotomus sepium cineraceus**, Blyth.
Orthotomus cineraceus, Blyth, Journ. Asiat. Soc. Bengal, xiv, p. 589 (1845).
Malacca.
- 486* **Cisticola juncidis cursitans** (Frankl.).
Prinia cursitans, Franklin P. 2. S., p. 118 (1831). Hindustan.
- 487 **Phylloscopus b. borealis** (Blas.).
Phylloscopus borealis, Blasius, Naumannia, 1858, p. 313. Ochotskan Sea.
- 488 **Phylloscopus b. xanthodryas** Swinhoe
Phylloscopus xanthodryas, Swinhoe, P. Z. S., p. 296 (1863). Amoy, China.
- 489 **Phylloscopus presbytis** [*Phylloscopus viridifemnis*?]
Muscicapa presbytis, S. Muller, Tijds. Nat. Gesch. ii, p. 331 (1835). Timor.
- 490 **Phyllergates c. cucullatus** Temm.
Orthotomus cucullatus, Temm. Pl. Col., 599, fig. 2 (1836). Java.
- 491* **Suya superciliaris albigularis**, Hume.
Suya albigularis, Hume, Stray Feathers, i, p. 459 (1873). Acheen,
Sumatra.
- 492 **Prinia familiaris**, Horsf.
Prinia familiaris, Horsfield, Trans. Linn. Soc. xiii, p. 165 (1820). Java.
- 493 **Burnesia f. flaviventris** (Deless.)
Orthotomus flaviventris, Delessert, Rev. Zool. p. 101 (1840). Bhutan.

FAMILY LANIIDAE.

- 494 **Hemipus hirundinaceus** (Temm.). [*Hemipus obscurus*.]
Muscicapa hirundinacea, Temminck, Pl. Col. 119 (1822). Java.
- 495 **Hemipus p. picatus** (Sykes).
Muscicapa picata, Sykes, P. Z. S., p. 85 (1832). India.
- 496 **Tephrodornis g. gularis** (Raffles). [*Tephrodornis virgatus*.]
Lanius gularis, Raffles, Trans. Linn. Soc. xiii, p. 304 (1822). Bencoolen
- 497 **Tephrodornis g. fretensis** Rob. and Kloss.
Tephrodornis pelvicius fretensis, Robinson and Kloss, Journ. Straits Branch
Roy. Asiat. Soc., 81, p. 109 (1920). Negri Sembilan, S. Malay
Peninsula.
- 498 **Platylophus galericulatus coronatus** (Raffl.).
Lanius coronatus, Raffles, Trans. Linn. Soc. xiii, p. 306 (1822). Sumatra.
- 499 **Lanius schach bentet**, Horsf.
Lanius bentet, Horsfield, Trans. Linn. Soc. xiii, p. 144 (1821). Java.

- 500 **Lanius tigrinus**, Drap.
Lanius tigrinus, Drapiez, Dict. Class. Nat. Hist. xiii, p. 523 (1828).
 Java.
- 501 **Lanius cristatus lucionensis**, Linn.
Lanius lucionensis, Linnaeus, Syst. Nat. i, p. 135 (1766). Philippines.
- 502 **Lanius cristatus superciliosus**, Lath.
Lanius superciliosus, Latham, Ind. Orn. Suppl. p. xx, No. 14 (1801).
 Java.

FAMILY PARIDÆ.

- 503 **Parus major malayorum**, Rob. and Kloss. [*Parus cinereus*].
Parus major malayorum, Robinson and Kloss, Journ. Fed. Malay States
 Mus., viii, pt. 2, p. 226 (1918). Korinchi, Sumatra.
- 504 **Melanochlora sultanea flavocristata** (Laf.).
Parus flavocristatus, Lafresnaye, Mag. Zool. 1837, pl. 80. "Isles de la
 Sonde." Sumatra restricted.

FAMILY SITTIDÆ.

- 505 **Dendrophila azurea expectata** (Hart.).
Callisitta azurea expectata, Hartert, Bull. Brit. Orn. Club, xxxv, p. 34
 (1914). Pahang, S. Malay Peninsula.
- 506 **Dendrophila f. frontalis** (Swains.)
Orthorhynchus frontalis Swainson, Zool. Ill. (1) pl. 2 (1820-1). Ceylon.

FAMILY CORVIDÆ.

- 507 **Corvus enca compiler**, Richm.
Corvus compiler, Richmond, Proc. U. S. Nat. Mus. xxvi, p. 518 (1903).
 Simalur Id., N. W. Sumatra.
- 508 **Corvus coronoides macrorhynchus** (Wagl.).
Corvus macrorhynchus, Wagl. Syst. Av., Corvus sp. 3 (1827). Java.
- 509* **Platysmurus l. leucopterus** (Temm.).
Glaucopis leucopterus, Temminck, Pl. Col. 265 (1824). Sumatra.
- 510 **Cissa chinensis minor**, Cab.
Cissa minor, Cabanis, Mus. Hein. i, p. 86 note (1851). Sumatra.
- 511 **Dendrocitta o. occipitalis** (S. Mull.).
Glaucopis occipitalis, Sal. Muller, Tijd. Natuur. Gesch. en Phys. II, p. 343,
 pl. ix, fig. 1 (1835). Sumatra.
- 512 **Crypsirhina varians** (Lath.).
Corvus varians, Latham, Ind. Orn. Suppl. p. xxvi, 1801). Java.

FAMILY DICRURIDÆ.

- 513 **Dicrurus annectens** (Hodgs.).
Buchanga annectans, Hodgs. Ind. Rev. i, p. 326 (1837). Himalayas.
- 514 **Dicrurus stigmatops phaedra**, Reichnw.
Buchanga stigmatops phaedra, Reichenow, Wissensch. Ergebn. d. Deutsch.
 Tiefsee Exped. vii, p. 356 (1904). W. Sumatra.
- 515* **Dicrurus stigmatops batakensis** Rob. and Kloss.
Buchanga leucophæa batakensis, Robinson and Kloss, Journ. Straits Branch
 Roy. Asiatic Soc., 80, p. 125 (1919). Bandar Baroe, N. E. Sumatra.

- 516* **Dicrurus borneensis sumatranus** (Wardl. Rams.).
Dicrurus sumatranus, Wardlaw-Ramsay, P.Z.S. 1880. p. 15. W Sumatra.
- 517 **Chaptia aenea picina** (Bp.).
Edolius picinus, Bonaparte, Consp. Avium, p. 352 (1850). Sumatra
- 518 **Dissemurus paradiseus platurus** (Vieill.)
Dicrurus platurus, Vieillot, Nouv. Dict. d'Hist. Nat. ix, p. 588. (1817).
 Malacca (Robinson and Kloss).
- 519 **Bhringa r. remifer** (Temm.).
Edolius remifer, Temminck, Pl. Col. pl. 178 (1823). Java.

FAMILY ORIOIDÆ.

- 520 **Oriolus chinensis maculatus** (Vieill.).
Oriolus maculatus, Vieillot, Nouv. Dict. d'Hist. Nat. xviii, p. 194 (1819).
 Java.
- 521 **Oriolus xanthornus xanthornus** (Linn.). [*Oriolus melanocephalus*].
Coracias xanthornus, Linn., Syst. Nat. i, p. 108 (1758). Bengal.
- 522 **Oriolus xanthonotus xanthonotus**, Horsf.
Oriolus xanthonotus, Horsfield, Trans. Linn. Soc. xiii, p. 152 (1821). Java.
- 523 **Oriolus cruentus consanguineus** (Wardl.-Rams.).
Analcipus consanguineus, Wardlaw-Ramsay, Ibis, p. 33, pl. 1, figs. 2, 3
 (1881). Sumatra.

FAMILY ARTAMIDÆ.

- 524 **Artamus leucoryn amydrus** Oberh. [*Artamus leucogaster*].
Artamus leucoryn amydrus, Oberholser, Proc. U. S. Nat. Mus., 54, p. 185
 (1917). Solombo Besar Id., East Java Sea.

FAMILY STURNIDÆ.

- 525 **Sturnopastor contra jalla** (Horsf.).
Pastor jalla, Horsfield, Trans. Linn. Soc. xiii, p. 155 (1821). Java.
- 526 **Sturnia sturnina** (Pall.).
Gracula sturnina, Pallas, Reis. Russ. Reichs. iii, p. 695 (1776). Dauria.
- 527 **Gracula j. javana** (Cuv.).
Eulabes javanus Cuvier, Regne Anim., I, p. 377 (1829). Java.
- 528 **Aplonis panayensis strigatus** (Horsf.). [*Calornis chalybea*].
Turdus strigatus, Horsfield, Trans. Linn. Soc. iii, p. 148 (1821). Java.

FAMILY PLOCEIDÆ.

- 529 **Munia oryzivora**, Linn.
Loxia oryzivora, Linnaeus, Syst. Nat. i, p. 302 (1766). Java.
- 530 **Munia maja** (Linn.).
Loxia maja, Linnaeus, Syst. Nat. i, p. 301 (1766). "East Indies."
- 531 **Munia atricapilla** (Vieill.).
Loxia atricapilla, Vieillot, Ois. Chant., p. 84, pl. 53 (1805). "les Grandes-Indes." Lower Bengal restricted.
- 532 **Munia punctulata nisoria** (Temm.).
Iringilla nisoria, Temminck, Pl. Col. 500, fig. 2 (1830). Java.

- 533 **Munia a. acuticauda**, Hodgs.
Munia acuticauda, Hodgs Asiat. Researches, xix, p. 153 (1836). Nepal.
- 534 **Munia l. leucogastra** (Blyth).
Amadina leucogastra, Blyth, Journ. Asiat. Soc. Bengal, xv, p. 286 (1846). Malacca.
- 535* **Munia leucogastra leucogastroides** (Horsf. and Moore)
Munia leucogastroides, Horsfield and Moore, Cat. Birds East Ind. Co. ii p. 510 (1856). Java.
- 536 **Erythrura prasina** (Sparrm.).
Loxia prasina, Sparrmann, Mus. Carls. ii, pls. 72, 73 (1788). Java.
- 537 **Sporæginthus a. amandava** (Linn.).
Fringilla amandava, Linn., Syst. Nat., i p. 319 (1766). Bengal.
- 538 **Ploceus passerinus infortunatus**, Hartert. [*Ploceus atrigula*.]
Ploceus passerinus infortunatus, Hartert, Nov. Zool. ix, 578 (1902) Kelantan, Malay Peninsula.
- 539 **Ploceella javanensis** (Less.).
Loxia javanensis, Lesson, Traite, p. 446 (1831). Java.

FAMILY FRINGILLIDAE.

- 540 **Passer montanus malaccensis**, Dubois.
Passer malaccensis, Dubois, Faun. Ill. Vertebr. Belg. Ois. i, p. 572 (1885). Malacca.

FAMILY MOTACILLIDAE.

- 541* **Motacilla cinerea caspica**, (S. G. Gm.). [*Motacilla melanope*.]
Parus caspicus S. G. Gmelin, Reise in Russland, iii, 1774, p. 104, Taf. 20, fig 2. Enzeli, Caspian Sea.
- 542 **Motacilla flava simillima**, Hart.
Motacilla flava simillima, Hartert, Vog. Palaarkt. Faun. heft III, p. 289 (1905). Kamtchatka.
- 543 **Motacilla flava taivana** (Swinh.).
Budytes taivana, Swinhoe, P. Z. S. p. 334 (1863). Formosa.
- 544 **Dendronanthus indicus** (Gm.).
Motacilla indica, Gmelin, Syst. Nat. i, p. 962 (1788). India.
- 545 **Anthus richardi malayensis**, Eyton.
Anthus malayensis, Eyton, P. Z. S. 1839, p. 104. Malacca.

FAMILY NECTARINIIDAE.

- 546 **Chalcostetha calcostetha** (Jard.). [*Chalcostetha insignis*.]
Nectarinia calcostetha, Jardine, Naturalist's Library, Ornith., xiii, p. 263 (1843). East Indian Ids
- 547 **Aethopyga mystacalis temmincki** (S. Mull.).
Nectarinia temmincki, Sal. Mull. Natuur. Gesch. Land-en Volkenk. p. 173, note (1843). W. Sumatra.
- 548 **Aethopyga s. siparaja** (Raffl.).
Certhia siparaja, Raffles, Trans. Linn. Soc. xiii, p. 290 (1822) W. Sumatra.
- 549 **Leptocoma b. brasiliiana** (Gm.) [*Cinnyris hasselti*.]
Certhia brasiliiana Gmelin, Syst. Nat., 1, p. 474 (1788). Java (Oberholser)

- 550 **Leptocoma jugularis ornata** (Less.) [*Cinnyris pectoralis*.]
Cinnyris ornatus, Lesson, Dict. Sci. Nat., i, p. 15 (1827). Java.
- 551 **Anthreptes m. macularia** Blyth. [*Anthothreptes hypogrammica*.]
Anthreptes macularia, Blyth, Journ. Asiat. Soc. Bengal, xi, p. 107 (1842).
Malacca
- 552 **Anthreptes s. simplex** (S. Mull.).
Nectarinia simplex, Sal. Muller, Natuur. Gesch. Land-en Volkenk. p. 173
(1843). Sumatra.
- 553 **Anthreptes m. malaccensis** (Scop.).
Certhia malaccensis, Scopoli, Del. Flor. et Faun. Insubr. ii, p. 91 (1786).
Malacca.
- 554 **Anthreptes rhodolaema**, Shelley.
Anthreptes rhodolaema, Shelley, Monogr. Nect. p. 313, pl. 101, fig. 1 (1878).
Malacca.
- 555 **Arachnothera l. longirostra** (Lath.).
Certhia longirostra, Latham, Ind. Orn. i, p. 299 (1790). Bengal.
- 556 **Arachnothera affinis modesta** (Eyton).
Anthreptes modesta, Eyton, P. Z. S., p. 105 (1839). Malacca
- 557 **Arachnothera chrysogenys**, Temm.
Arachnothera chrysogenys, Temminck, Pl. Col. 388, fig. 1 (1826), Bantam,
Java.
- 558 **Arachnothera r. robusta**, Mull. and Schlæg.
Arachnothera robusta, Sal. Muller and Schlegel, Verh. Nat. Gesch. Aves,
p. 68, pl. 11, fig. 1 (1846) Padang Residencies, W. Sumatra.
- 559 **Arachnothera crassirostris** (Reichenb.).
Arachnocestra crassirostris, Reichenb. Handb. Scans. p. 314, No. 747 pl. 592,
fig. 4016 (1854). Sumatra (Robinson and Kloss).
- 560 **Arachnothera flavigaster** (Eyton).
Anthreptes flavigaster, Eyton P. Z. S. p. 105 (1839). Malacca.

FAMILY DICAËIDÆ.

- 561 **Dicaeum s. sanguinolentum**, Temm.
Dicaeum sanguinolentum, Temminck, Pl. Col. 478, fig. 2 (1829). West Java
(Robinson and Kloss).
- 562 **Dicaeum s. beccarii**, Rob. and Kloss.
Dicaeum beccarii, Robinson and Kloss, Journ. Straits Branch Roy. Asiat.
Soc., 73, p. 278 (1916). Korinchi, Sumatra.
- 563 **Dicaeum cruentatum sumatranum**, Cab.
Dicaeum sumatranum, Cabanis, Journ. fur. Orn. p. 101 (1878). Sumatra.
- 564 **Dicaeum t. trigonostigma** (Scop.).
Certhia trigonostigma, Scopoli, Del. Flor. et Faun. Insubr. ii, p. 91 (1786).
Malay Peninsula (Hartert).
- 565 **Dicaeum c. chrysorrhoeum**, Temm.
Dicaeum chrysorrhoeum, Temminck, Pl. Col. 478, fig. 1 (1829). Java.
- 566 **Dicaeum concolor olivaceum**, Walden.
Dicaeum olivaceum, Walden, Ann. and Mag. Nat. Hist. (4) xv, p. 401 (1875).
Toung-hoo, Burma.
- 567 **Prionochilus percussus ignicapillus** (Eyton).
Dicaeum ignicapilla, Eyton, P. Z. S. p. 105 (1839). Malay Peninsula.

- 568 **Prionochilus m. maculatus** (Temm.).
Pardalotus maculatus, Temminck, Pl. Col. 600, fig. 3 (1836). Borneo.

FAMILY ZOSTEROPIDAE.

- 569 **Zosterops montana** (Bp.).
Zosterops montana, Bonaparte, Consp. Av. i, p. 398 (1850). Padang Highlands, Sumatra.
- 570 **Zosterops difficilis**, Rob. and Kloss.
Zosterops difficilis, Robinson and Kloss, Journ. Fed. Malay States Mus. viii, pt. 2, p. 250 (1918) Mt. Dempo, S. Sumatra.
- 571 **Zosterops flava** (Horsf.).
Dicaeum flavum, Horsfield, Trans. Linn. Soc. xiii, p. 170 (1821). Java.
- 572 **Zosterops aureiventer buxtoni**, Nicholson.
Zosterops buxtoni, Nicholson, Ibis, p. 167 (1879). West Java.
- 573 **Zosterops atricapilla**, Salvad.
Zosterops atricapilla, Salvadori, Ann. Mus. Civ. Gen. xiv, p. 215 (1879). Padang Highlands, Sumatra.

FAMILY CHALCOPARIIDAE.

- 574 **Chalcoparia singalensis sumatrana**, Kloss.
Chalcoparia singalensis sumatrana, Kloss, Journ. Fed. Malay States Mus. x, p. 209 (1921). Padang Highlands, Sumatra.
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NOTES.

6. **Tropicoperdix charltoni** is recorded by Vorderman from the Lampongs (Nat. Tyd. Ned. Ind. LV, 1895, p. 154) but several of the determinations in that paper are so doubtful [e. g.:—*Baza magnirostris* (Philippines species), *Spizaetus lanceolatus* (Celebes species)]—that further confirmation is required. However, we include the species for the present.

13, 14. **Lophura** spp. For a discussion of Sumatran races and names vide Buttikofer, Notes Leyden Museum, XVII, 1896, pp. 169–196, whose nomenclature differs somewhat from ours.

15, 16. **Gallus**. We have dealt with the nomenclature of the Red Jungle-fowl elsewhere (Records Indian Mus., XIX, 1920, pp. 13–15, 181–183). The Zoological Museum, Buitenzorg, contains a specimen of the Javan race from the Lampongs.

19. **Pavo muticus**, No. 18 of our first list. We now believe that the Peacock does not really occur in Sumatra in the wild state and it is therefore not included in the present list.

20. **Turnix pugnax**. In Journ. Bombay Nat. Hist. Soc., XXVIII, 1922, p. 851, note, Baker states "*Pugnax*" of Temminck (1815) is antedated by *Javanica* of Rafinesque (1814)." This may be so, but a still earlier name seems to be *Tetrao Susicator* Gm., Syst. Nat. I, 1788, p. 763, Java. We retain for the present the specific name by which this quail is commonly known.

24. **Treron curvirostra**. We are unable to say whether the Sumatran bird differs from the typical form inhabiting the Malay Peninsula. It has been recorded from Sumatra under names applied to birds from various other parts of the Oriental region, viz.:—*nipalensis*, *nasica*, *griseicauda*. Parrot has named N. E. Sumatran birds *Treron harterti* (Abh. K. Bayer. Akad. Wiss. II, K1. XXIV. Bd. I. Abh. 1907, p. 261) and this name will have to be used for the Sumatran bird, if distinct (cf. Journ. Nat. Hist. Soc. Siam, V, 1921, pp. 26–28).

We do not believe in the occurrence in Sumatra of the very dubious subspecies *Treron curvirostra nasica*, Schleg., originally described from Southern Borneo, though both Salvadori (Ann. Mus. Civ. Gen. xiv, 1879, p. 77), Hartert (Nov. Zool. ix, 1902, p. 215, and Parrot (l. c. s.) record it, the first from West Sumatra and the others from the neighbourhood of Deli. In the former case it occurred flying in the same flocks as the typical race, as specimens of both were obtained by Beccari on the same date. *Nipalensis* is the Indo-Chinese form and *griseicauda* is based on Javanese birds.

30. The generic name **Muscadivora** Schlegel, 1864, replaces the better known *Corpophaga* which is preoccupied.

35. The Buitenzorg Zoological Museum possesses an adult male and a young example of **Macropygia e. emiliana** from Palembang.

38. **Streptopelia bitorquata**. We have examined a male, obtained at Deli by Dr. de Bussy and now in the Amsterdam Museum, which entitles this species to a place in the Sumatran list. Whether the bird was truly wild or had been introduced from Java we are unable to say: probably the latter.

Vorderman recorded the species as occurring, but it then only rested on a casual reference by Lesson and Wallace.

42. **Hypotaenidia striata**. Oberholser suggests that Sumatran birds belong to the typical Philippine form (Proc. U. S. Nat. Mus. 55, 1919, p. 477) and not to the Javanese *gularis* (Horsf.) or the Malayan *albiventris* (Swainson). The Sumatran specimens we have seen cannot be separated from others from the Malay Peninsula and Siam: we have not been able to compare our material with Javanese or Philippine examples.

47. **Limnobaenus paykulli**. An example of this very wandering species was obtained by Heer A. C. F. van Heyst at Medan, Deli, N. E. Sumatra, on 7th January 1918.

48. The material on which the Sumatran record of **Porzana pusilla pusilla** (Pall.) is based on a specimen collected in the Padang Regencies at Koto Gadang (Salimpasing) on 15th January 1914 by Heer E. Jacobson.

53. Hartert (Vög. palaarkt. Fauna, 1921-2, p. 1851) states that **Fulica lugubris** Müll., is based on an imperfect specimen and is synonymous with *F. a. atra* Linn. (Syst. Nat. I, 1758, p. 152. Sweden).

54. The Water-Cock, **Gallicrex cinerea** almost certainly occurs in Sumatra as stated by Sharpe (Cat. Birds Brit. Mus, XXIII, p. 183) though we can find no definite authority. It is included in Vorderman's list as *Gallixev cristata*, Lath., without number and with a (?).

55. **Heliopais personata**. This has been obtained by de Beaufort and de Bussy in the Medan District, and by Jacobson in West Sumatra.

57-69. **Laridae**. Of this family we have recorded as occurring in Sumatra all species which have been actually obtained in the Straits of Malacca. Vorderman only records with certainty six species: of which one, No. 492 *Onchoprius fuliginosus* Gm. ("Archipel Indien"), is certainly an error.

57. **Hydrochelidon leucoptera**. If Malaysian birds are distinct from those of Europe they must probably bear the name *H. l. grisea* (Horsf. Trans. Linn Soc. XIII, 1821, p. 199, Java).

58. **Geochelidon nilotica**. If Malaysian birds are distinct from the typical N. African form they must be known as *G. n. affinis* (Horsf. Trans. Linn. Soc. XIII, 1821, p. 199, Java).

59. **Sterna hirundo tibetana**. We have recorded Sumatran birds by the name given to the Asiatic form; but (fide Hartert, Vög. palaarkt. Fauna, p. 1702) the typical European race also occurs in Malaysia in the winter.

60. **Sterna dougalli**. According to Hartert (Vög. palaarkt. Fauna, p. 170) Malaysian birds if they are regarded as distinct from the typical race should be called *S. d. bangsi* Mathews (Birds of Australia, II, 1912, p. 364, Foochow, China).

62. **Sterna bergii**. Stresemann (Nov. Zool, XXI, 1914, pp. 57-59) and Oberholser (Proc. U. S. Nat. Mus. 49, 1915, pp. 515-526) have both reviewed the races of this Tern. According to the former Sumatran birds should be called *S. b. cristata* Stephens (Shaw's Gen. Zool. 13, 1826, p. 146, China); the latter considers them to be *S. b. pelicanoides* King (Survey Intertrop. Coasts Austr. II, 1826, p. 422, Torres Strait) which Stresemann regards as synonymous with *S. b. cristata*.

70. **Oceanodroma m. monorhis**. This petrel has been obtained at Singapore and at the One Fathom Bank in the Straits of Malacca and almost certainly therefore occurs in Sumatran Waters.

71-98. **Chardriiformes**. In this group Vorderman records with certainty only 14 species of which one, *Himantopus leucocephalus*, Gould (P.Z.S. 1837, p. 26) rests on a casual mention of Sumatra by Sal. Müller (Verh. Land-en Volkenk, 1839-44, p. 153) and cannot be accepted. Another, No. 438 *Orthorhamphus magnirostris*, Geoffr. (Asie meridionale, Java) = *Oedicnemus magnirostris*, Vieillot (ex Geoffr., Nouv. Dict. d'Hist. Nat. XXIII, 1819, p. 231) rests on no sufficient authority, though as it has been found on the Mergui Ids. and on Pulau Bintang in the Rhio Archipelago it will almost certainly be found ultimately in E. Sumatra. No. 449 *Numenius major*, Temm. (Malacca, Borneo, Java), is a synonym of the Eastern Curlew *Numenius cyanopus*, Vieillot. (Nouv. Dict. d'Hist. Nat. VIII, 1817, p. 306) which does not extend to the Straits of Malacca though it is sometimes met with in Borneo and Java.

As regards our own list we have recorded as Sumatran most of the species that are found on the mud-flats of the Straits of Malacca with one or two exceptions.

In addition to those enumerated *Dromas ardeola*, Paykull (Konigl. Vet-Akad. Handl. Stockh. XXVI, 1805, pp. 182, 188, tab. I) the Crab Plover, which occurs occasionally on the Klang Islands off the Selangor coast will probably also be found on the western sides of the Straits.

80. For *Aegialitis a. alexandrina* (Linn.) read *Aegialitis alexandrinus dealbatus* Swinh.

Aegialitis dealbatus Swinhoe, P. Z. S. 1870, p. 138 South Coast, China

80a. Add *Aegialitis alexandrinus peroni* (Bp.)

Charadrius peroni Bonaparte, Compt. Rend. XLII, 1856, p. 417. Java.

(Vide Robinson and Kloss, Journ. Straits Branch Royal Asiatic Soc., 81, 1920, p. 89; Journ. Nat. Hist. Soc. Siam, V, 1921, p.p. 62, 63).

89. *Rhyacophilus glarcola*. Asiatic birds have been named *Glottis glottoides* by Vigors (P. Z. S. 1831, p. 173. Himalayas) but are not at present recognised as distinct.

101. *Plegadis falcinellus* (*Tantalus falcinellus*, Linn. Syst. Nat. I, 1766, p. 241. This species is recorded as 478 *Falcinellus igneus*, Gm. (cosmopolite) by Vorderman. Though it not improbably occurs it is not vouched for by any authentic record. If the bird is found in Sumatra it will probably belong to the South-eastern race *P. f. peregrinus* (Bp. Consp. Av. II, 1857, p. 159. (Java and Celebes).

104. *Dissoura stormi*. This bird is a distinct species and not a local race of the preceding. It has been collected by Dr. W. L. Abbott and Mr. C. B. Kloss on the Little Siak River, Eastern Sumatra.

105. *Leptoptilus dubius* (*Ardea dubia*, Gmelin. Syst. Nat. I, 1788, p. 624), is recorded by Vorderman as No. 474 of his list but probably does not occur in the Malaysian sub-region.

110. *Herodias alba*. We are not certain which race occurs in Sumatra: the typical western *H. a. alba*, or the south-eastern form *H. a. modesta* (Gray, Zool. Misc. p. 19, 1831. India: syn. *A. timoriensis* Lesson. Timor).

111. *Garzetta garzetta*. We cannot state whether the typical race occurs in Sumatra, or the South-eastern form *G. g. nigripes* (Temminck, Man. d'Orn, IV, p. 376, 1840. Sunda Ids.).

116. We have not included *Ardeola speciosa* (Horsf.), mentioned by Vordermann in his list of Sumatran birds, as no specimens from that island seem to be extant.

120. The Zoological Museum at Buitenzorg possesses an adult male and a young individual of *Nannocnus eurytmus* from Palembang.

125. *Dendrocycna arcuata*. Heer E. Jacobson obtained two examples at Palembang in September, 1916

128-138. *Pelicaniformes*. Very few examples of this order have been obtained from Sumatra and we have seen none ourselves: we can therefore claim no accuracy for this section of our list.

128. Read *Plotus rufa melanogaster*

129. We have not sufficient material to decide which form of this cormorant inhabits Sumatra: it is probably *sinensis* (Shaw and Nodder) of China, with which, according to Ticehurst (Ibis, 1923, p. 458) *indicus* Mathews, is synonymous. The occurrence of *Phalacrocorax javanicus* (*Carbo javanicus* Horsfield, Trans. Linn. Soc. XIII, p. 197, (1821) in Sumatra, recorded by Vordermann as 486 *Microcarbo pygmaeus*, Pall. (Borneo, Java) remains to be verified.

130. *Fregata aquila*. Rothschild states (Nov. Zool. XXII, 1915, p. 146) that the British Museum possesses a Frigate-bird collected at "Malacca" by Davidson which is indistinguishable from Ascension Island males.

133. *Phaethon rubricauda*, Boddaert (Tabl. Pl. Enl. 1783, p. 57, included in Vorderman's list as No. 491 does not appear to have been obtained nearer to Sumatra than Christmas Island where it is common. The birds occurring there have been named by Mathews *P. v. westralis* (Austral Av. Rec. I, 1912, p. 88. West Australia). Another Tropic-bird found on Christmas Id. is *P. fulvus* Brandt.

149. **Milvus affinis** Gould, and **M. govinda** Sykes. We know of no authentic record for either of these which are entered in Vorderman's and Wardlaw-Ramsay's lists respectively.

151-152. Stresemann states that **Pernis apivorous orientalis** Taczanowski, winters in the "Greater Sunda Ids." (Journ. f. Ornith. 1922, p. 488). Heer E. Jacobson obtained in the Padang Highlands, 26th February, 1914, a blackish brown, crestless female with a wing of 450 mm. which seems to represent this Eastern Siberian race.

160. **Pandion haliaetus**. The Sumatran bird may be the form *Pandion leucocephalus* Gould.

190. **Alcedo beryllina** Vieill., No. 107 of Vorderman's list, is almost certainly confined to Java and some of the lesser Sunda Islands and does not occur in Sumatra. The correct name for the species is *Alcedo coerulescens* of the same author which has page priority.

192. **Ceyx tridactylus**. Laubmann has pointed out (Ornith. Monatsber. XXXI, 1923, p. 89) that this species must be called **Ceyx erithaca** (Linn.). *Alcedo erithaca* Linn. Syst. Nat. 1, 1758, p. 115. "Habitat in Benghala" is eleven years older than *Alcedo tridactyla* Pallas.

193. Laubmann (t. c. p. 90) considers *Ceyx enopopygius* to be a synonym of *C. erithaca*. If he is correct Nos. 192 and 193 will both stand as **Ceyx e. erithaca** (Linn.).

191-193. The advent of considerable additional material of *Ceyx* from Sumatra and other large islands has caused us to modify our former views in the group. A form of **Ceyx erithaca** (Linn.) evidently occurs in Sumatra though we ourselves have seen no specimen from the main island.

Whether **C. enopopygius** Oberholser, is a good species we are unable to say; it is categorically described as having a cobalt-blue instead of magenta rump, a feature which would separate it very markedly from all other local species of the genus. Specimens from Aroa Islands and One Fathom Bank, Straits of Malacca, differ no way from mainland birds.

As regards the *red-backed* group we are now prepared to admit that Hartert is probably right in considering **C. rufidorsus** Strickl., as representing the form later named by Sharpe *C. euerythrus* and not as an immature *C. tridactylus* (= *C. erithaca*).

As regards *C. dilwynni* (type from Labuan) the majority of a large series from southern Sarawak agrees more nearly with *C. rufidorsus*; but one specimen from the Baram River differs very markedly in having blue-black wingcoverts blue scapulars and a red back, agreeing perfectly with the type description: for the present therefore we regard *C. dilwynni* as a form representing *C. erithaca* in northern Borneo.

The birds we recorded as *C. dilwynni* from Deli and Serdang, N. E. Sumatra (Journ. Straits Branch Roy. Asiatic Soc. No. 80, 1919, p. 85) we now regard as subadult examples of *C. rufidorsus*.

194, 195; 198, 199. **Halcyon coromanda** and **H. chloris**. With reference to races in Sumatra cf. Kloss, Journ. F. M. S. Mus. X, 1921, pp. 214, 217.

202. **Buceros sylvestris** Vieill., No. 188 of our first list. We do not now consider that this really occurs in Sumatra. It is probably confined to Java.

212. **Upupa epops longirostris**. We have included this bird in the Sumatran list on the strength of a specimen from Medan, Deli, recorded as *U. e. indica* by de Beaufort and de Bussy (Bijdr. t. d. Dierk., Natura Artis Magistra, XXI, p. 249.)

218. **Caprimulgus pallidus** Hartlaub, and **Caprimulgus faberi** Meyer, Nos. 131 and 133 of Vorderman, have no claim to specific distinctness.

221. Oberholser has separated a male nightjar from East Sumatra from *C. concretus* on account of the outer tail feathers being entirely without white or buffy tips or subterminal bands (*C. mirificus* Oberh., Smithsonian Misc. Collections, Vol. 60, No. 7, 1912, p. 7). To one of three Bornean males in our possession the description of *C. mirificus* exactly applies. It seems evident, therefore, that the proposed form is based on a phase and has no existence in fact.

p. 334. For APIDAE read MICROPODIDAE.

223. For *Apus* read *Micropus*.

224. Read *Micropus affinis subfurcatus*.

226. For *giganteus* read *gigantea*.

231. *Collocalia linchi cyanoptila*. We have recorded under this name specimens we have examined from Deli, N. E. Sumatra (Journ. Straits Branch Roy. Asiatic Soc. 80, 1919, p. 90): they are, however, small and are possibly more nearly allied to *C. l. affinis* Beavan, of the Andaman and Nicobar Islands.

232. *Collocalia linchi oberholseri*. An individual from the Padang Highlands appears to belong to this form which is based on material from the Pagi Islands some 150 miles to the south.

233. *Collocalia linchi dodgei*. Further consideration of specimens from Korinchi which we recorded as *C. linchi* (Journ. F. M. S. Mus. X, pt. 2, 1918, p. 132) leads us to consider that they are the same as the North Bornean mountain race.

252. Hartert (Vög. palaarkt. Fauna, p. 952) states that *Cuculus micropterus micropterus* Gould, visits in the Indo-Australian Archipelago in winter. It may therefore occur in Sumatra.

254. An example of *Cuculus optatus* was obtained by Heer E. Jacobson at Fort de Kock in January, 1914.

259. *Penthoceryx sonnerati fasciolata*. Muller's description covered birds from Java and Sumatra, but at the end he stated that the latter were darker—as is the case. We therefore accept *Cuculus fasciolatus* for the Sumatran race, confining *Cuculus pravatus* Horsf., to the Javanese bird.

278. *Chotorhea rafflesii*. Stresemann has shown (Anz. Orn. Ges. Bayern, 1921, p. 24) that *Bucco versicolor* Raffles, is preoccupied by the same of P. S. L. Muller. Lesson's *Bucco Rafflesii* is the first subsequent name.

283. *Xantholaema haemacephala delica*. Stresemann shows that *Bucco Rafflesius* Boie, is a nomen nudum. (Anz. Orn. Ges. Bayern, 1921, p. 24) Parrot's name is therefore available for the subspecifically distinct Sumatran bird.

296. *Dryobates canicapillus volzi* Stresem., is possibly the same as *Lyngipicus c. suffusus* Rob. and Kloss (Bull. Brit. Orn. Club, XL, 1919, p. 14. Selangor, South Malay Peninsula). We have no Sumatran birds but they appear to differ from *canicapillus* and *aurantiventris* is the same way as does *suffusus*.

301. *Dinopium j. javanense* Stresemann has recently separated Sumatran birds from those of Java as *D. j. palmarum* in the belief that they are of smaller size (Arch. f. Naturgesch. 87, 1921, p. 43): we do not find this to be the case and have gone into the question elsewhere (Journ. Nat. Hist. Soc. Siam, V, pt. 2, 1923). Briefly we find that Sumatran birds attain a wing length of 139 mm. while the wings of Javanese reach 140 mm. with one exception. The latter has a wing of 142.5 (fide Hesse, Mitt. Zool. Mus. VI, 1912, p. 190) and came from Temminck: though Hesse thought its Javanese origin not to be doubted it is quite possible that it is an example of *D. j. intermedia* (Blyth). In any event 3.5 mm. in one specimen only in a bird of this size seems hardly enough to establish a local form as there are no other differences.

314. The Zoological Museum at Buitenzorg possesses a young example of *Eurylaimus j. javanicus* from the Lampongs. This, the typical form, is probably confined to the southern extremity of the island.

321. *Pitta sordida mulleyi* Bp., has been recorded from Sumatra but no doubt specimens have been wrongly determined as it is highly improbable that the Bornean form occurs as well as *P. s. cucullata*. The examples whose identity we question may well have been, however, *P. s. bangkana* Schleg., of Bangka Island: it is quite possible that this form occurs in the adjacent lowlands of Sumatra.

As the species name, *Turdinus sordidus* Müller, has priority over the familiar *Pitta atricapilla* of Lesson.

328. **Hemichelidon sibirica.** The form occurring in Sumatra is probably the typical one and not *H. s. fuliginosa* Hodggs., of Nepal, but we have seen no specimens. *H. s. sibirica* has wings of 75 to 83 mm.: *H. s. fuliginosa* is a darker, rather smaller race with wings of 70 to 75 mm.

334. **Cyornis elegans rupatensis** Oberholser (Proc. Biol. Soc. Washington, 33, 1920, p. 87) from Pulau Rupert, East Sumatra (paratype examined) does not seem separable either from West Sumatran or from Malayan birds. The recorded differences appear to be individual as we have specimens exactly agreeing in our Malayan and Bornean series.

336. We have examined males of a species of *Cyornis* from the Deli and Ophir Districts; the example from the first locality being one recorded by de Beaufort and de Bussey as *C. nigrigularis* (Bijdr. t. d. Dierk. Afl. xxi, p. 259). The specimens, however, differ from ten Sarawak males which we regard as Everett's form in lacking the blue-black areas on the sides of the breast and in having the abdomen and tailcoverts white, the flanks alone being of the colour of the foreneck. The disposition of the colours is as in the female of *C. elegans* but the tints are darker, while the throat and sides of the neck are black.

Cyornis nigrigularis Everett, is probably synonymous with *Schwaneria caeruleata* Bp., also from Borneo; as is also *Cyornis rufifrons* Wallace, from the same island.

348. First met with in Sumatra by Heer E. Jacobson in 1914.

350-353. Of the species listed by Vorderman, 159 *Rhipidura phaenicura*, Mull., 161 *Rhipidura longicauda*, Wall., and 162 *Rhipidura salvadori* Sharpe, do not occur in Sumatra.

352. As ***Rhipidura euryura*** has been recorded from Sumatra we include it in our list, but we are doubtful of its occurrence outside Java, Sharpe has made it the type of a genus *Neomyias*.

359. ***Rhinomyias umbratilis infuscata*** Finsch has pointed out (Notes Leyden Museum, XXII, 1901, p. 202) that the types of *Muscicapa infuscata* Blyth, 1870, are not females of *Cyornis unicolor* as was thought by Blyth [and by Hartert, Nov. Zool. IX, 1902, p. 550] but Sumatran representatives of *Alcippe* [*Rhinomyias*] *pectoralis* Salvad., 1868.

Stone has discovered (Proc. Acad. Sci. Philadelphia. LIV, 1902, p. 686) that the type of *Trichostoma umbratile* Strickland, 1849, from Borneo is not an example of *Trichostoma* [*Aethostoma*] *rostratum* Blyth, as long supposed, but is the Bornean species later named *Alcippe pectoralis* by Salvadori.

The Bornean lowland bird is therefore *Rhinomyias umbratilis umbratilis* (Strick.) and the Sumatran one is *R. u. infuscata* (Blyth).

It cannot be doubted that *Rhinomyias umbratilis richmondi* Stone (l. c. s.) from Mansalar Island, West Coast of Sumatra, with which when describing it Stone identified another specimen from Lingga Island, East Coast of Sumatra is the same bird as that which occurs on Sumatra itself. *R. u. richmondi* would seem to be, therefore, a synonym of *R. u. infuscata*.

360. ***Rhinomyias olivacea*.** Whether *Hyloterpe brunneicauda* Salvad. (Ann. Mus. Civ. Gen. XIV, 1879, p. 46. Padang District) applies to this bird, as we are inclined to think, or to *Muscitrea grisola* (Blyth) as others believe, it has no existence in fact. Neither of these species is at all differentiated in Sumatra.

367, 368. *Stoparola* Blyth, 1836, as the generic name for these flycatchers is invalidated by previous use: but **Stoporala** Blyth, 1845, is available (vide Oberholser, Proc. Biol. Soc. Washington, 32, 1919, p. 47)

369, 370. Of the Caterpillar-Shrikes, which must now be called **Coracina** instead of *Graucalus* or *Artamides*, the following species are wrongly attributed by Vorderman to Sumatra, viz., 182 *Artamides bicolor* Temm., 185 *Graucalus Javensis* Horsf., 187 *Graucalus striatus* Bodd.

374. *Pericrocotus peregrinus* must stand as **Pericrocotus cinnamomeus**. Laubmann has shown (Ornith. Monatsber. XXXI, 1923, p. 40), that both names apply to the same species and the latter has page priority. The reference is *Motacilla cinnamomea* Linn. Syst. Nat. i, 1766, p. 335. Ceylon (Syn. *Parus malabaricus* Gm. Syst. Nat. i, 1789, p. 1012, Malabar).

387. **Ixos** Temminck, is a perfectly valid genus with type *Ixos virescens* Temm. (Pl. Col., 1825, livr. 64, pl. 382, fig. 1) and must be used instead of *Hemixus*.

390. Oberholser has named the bird of Jimaja Id, Anambas Group, S. China Sea, **Iole olivacea crypta** (Proc. Biol. Soc. Washington, 31, 1918, p. 197.) He states that the form also occurs in Sumatra but we are unable to separate the examples we have seen from that island from the typical race.

398. Sumatran representatives of **Tricholestes criniger** are intermediate between Malayan and Bornean birds and Müller's name, published by Blyth, is available for them. It is possible, however, that *Setornis criniger* Lesson, an undetermined name, is based on this bird (Rev. Zool. 1839, p. 167. Sumatra) in which case it has priority over all others. The three races would then have to stand as *Setornis c. criniger* Less. (Sumatra), *S. c. minutus* (Hartl.) Malay Peninsula, *S. c. viridis* (Bp.) Borneo.

408. **Molpastes aurigaster aurigaster**. An introduced species but now fairly common wherever Javanese immigrants have settled in any numbers.

431. We have not included **Horizillas rufifrons** (Cabanis), based on material from "Java or Sumatra," in our list. It has not been met with by recent collectors and we believe that all birds recorded as coming from Sumatra have been wrongly attributed to the island, or that they are perhaps examples of *H. cinerea* (Eyton) which have been wrongly determined. Neither do we believe that it inhabits Borneo or Pulau Laut. The species is almost certainly one of those which occur in South-eastern Indo-China and again in Java only. It may be considered as replaced in the Malay Peninsula, Sumatra and Borneo by *Horizillas cinerea*.

436. Though **Alcippe poioicephala pyrrhoptera** (Bp.) has been assigned to Sumatra and birds, presumably thence, have been named *Alcippe solitaria* by Cabanis, we do not believe is the occurrence of the species. All records are based on material obtained by early travellers, such as Müller, and are probably wrongly localised: no examples are included in the large collections made in the island in recent years.

454. We have omitted from our list *Brachypteryx flaviventris* Salvad., Ann. Mus. Civ. Genova XIV, 1879, p. 226, based on a single female from Mt. Singalang. We cannot place this bird.

466. Vorderman records (Nat. Tyd. Ned. Ind. li, 1891, p. 235) **Geocichla rubiginosa** S. Müll., = *Geocichla peronii* (Vieill.), from Sumatra and Malacca. This bird is confined to Timor and the neighbouring islands and we do not know what species is referred to.

485. We do not believe is the occurrence of **Orthotomus sepium sepium** Horsf. in Sumatra. The Sumatran birds referred by Temminck to this form in Planches Colories Livr. 101, are examples of *O. s. cineraceus* Blyth.

486. **Cisticola juncidis cursitans**. Stresemann has shown (Journ. of Ornith, 1922, p. 128) that the species name *cisticola* Temm. is antedated by *juncidis* (Rafinesque).

541. Laubmann shows (Ornith. Monatsber. XXX, 1922, p. 89), that Pallas' name for this wagtail, *Motacilla melanocephala*, 1776, is antedated by that of S. G. Gmelin, *Parus caspica*, 1774.

491. We have not included in this list **Burnesia dysancrita** Oberholser (Smithsonian Miscellaneous Collections, Vol. 60, No. 7, 1912, p. 14. N. W. Acheen) as the description seems to answer in every respect to *Suya superciliaris albicularis* Hume (Stray Feathers I, 1873: N. E. Acheen). *Burnesia dysancrita* is compared with *Burnesia superciliaris* but in the absence of the authority for the latter we are unable to say whether *Suya superciliaris* Anderson, from Yunnan, or *Prinia superciliaris* Salvad., from Borneo, is intended.

509. The "Handlist of Birds" Vol. V, p. 610, records **Platysmurus schlegeli** Pelz. (Verh. Ges. Wien, XXIX, 1880, p. 529) from Sumatra as well as *Platysmurus leucopterus*. All specimens of *Platysmurus* from Sumatra we have examined are inseparable from Malayan birds and we are unable to allocate *P. schlegeli*, of which we have seen no description.

515. **Dicrurus leucogenys** Walden. Hartert believed that he had obtained one example of this species in Deli, but he could not find the specimen when he was writing up his collection (Nov. Zool. IX, 1902, p. 208).

We doubt the occurrence of this bird in Sumatra. It is a winter migrant from the north and apparently travels over land only: we have never met with it during the migration period on any of the islands of the Straits of Malacca but only on the Peninsula; and it is unknown in Java and Borneo. It should be noted, however, that Oberholser has described from North Pagi Island, West Sumatra, a King-crow under the name of *Dicrurus leucogenys diporus* (Smithsonian Miscellaneous Collections, Vol. 60, No. 7, 1912, p. 15).

516. We have, for the moment, placed the Sumatran bird as a race of **Dicrurus borneensis** (Sharpe), as the two are so alike as to be only just separable; but both should undoubtedly be referred subspecifically to an earlier name though we are not now in a position to say which.

535. **Munia leucogastra leucogastroides**. We have placed the Javanese bird as a subspecies of the Malaccan one though both are recorded from Sumatra, *leucogastroides* by Tweeddale from the Lampongs and *leucogastra* by Hagen from Deli. We have seen no examples from Sumatra of either and we think the matter requires further investigation.

LIST OF THE REPTILES AND BATRACHIANS OF S U M A T R A

(pp. 297—306).

ADDENDA.

Several additions are rendered necessary to our list by the publication of Mr. Boulenger's paper on Mr. C. J. Brook's collection of Reptiles and Batrachians from Bencoolen (Ann. and Mag. Nat. Hist. (9) 5, 1920, pp. 281—283) and the report of Dr. van Lidth de Jeude on Heer E. Jacobson's collection of Snakes (Zool. Mededeel. VI, 1922, pp. 236—252) from the Padang and Korinchi Highlands while we have amended the snakes by means of Dr. de Rooij's works on the Reptiles of the Indo-Australian Archipelago (Vol. II, 1917), not accessible when our list was printed.

The Batrachians must stand, with two or three added, until readers can revise it in the light of Dr. van Kampen's forthcoming work on the Batrachians of the Indo-Australian Archipelago.

Class REPTILIA.

ORDER SQUAMATA

SUBORDER LACERTILIA.

FAMILY GECKONIDAE.

- 29 a **Gecko brooksi**, Blgr.
Ann. and Mag. Nat. Hist. (9), 5, 1920, p. 281.
- 30 a **Ptychozoon horsfieldi** Gray.
Pteropieura horsfieldi Gray, Phil. Mag. (3), II, 1827, p. 56

FAMILY AGAMIDAE.

- 39 a **Draco obscurus**, Blgr.
Ann. and Mag. Nat. Hist. (5) 20, 1887, p. 95.

FAMILY SCINCIDAE.

- 67 a **Mabuia rugifera**, Stol.
Tiliqua rugifera Stoliczka, Journ. Asiat. Soc. Bengal, XXXIX, 1870,
p. 170, pl. X, fig. 3.
- 76 a **Lygosoma vittigerum**, Blgr.
Ann. Mus. Civ. Genova, (2), XIV, 1894, p. 615.
- 80 a **Typhlops nigroalbus** Dum. and Bibr.
Erp. Gen, VI, 1844, p. 205.

SUBORDER OPHIDIA.

FAMILY ILYSIIDAE.

- 85 a **Anomalochilus weberi** van Lidth de Jeude.
In Weber's Zool. Ergeb., 1890-1, p. 181, pl. XV, figs. 1-3.

FAMILY COLUBRIDAE

- 91 a **Pseudoxenodon jacobsoni** van Lidth de Jeude.
Zool. Mededeel. VI, 1922, p. 240.
- 98 a **Tropidonotus petersi** Blgr.
Cat. Snakes. Brit. Mus. I, 1893, p. 225.
- 111 a **Zamenis mucosus** (Linn.)
Coluber mucosus Linn. Syst. Nat. I, 1766, p. 388.
- 124 a **Simotes subcarinatus**, Gthr.
Proc. Zool. Soc. 1872, p. 595, pl. XXXIV, fig. B.
- 124 b **Simotes annulifer** Blgr.
Proc. Zool. Soc. 1893, p. 254.
- 146 a **Calamaria lumbricoidea** Boie.
Isis, 1827, p. 540.
- 146 b **Calamaria leucocephala** Dum. and Bibr.
Erp. Gen. VII, 1854, p. 83.
- 146 c **Calamaria schlegeli** Dum. and Bibr.
Erp. Gen. VII, 1854, p. 81.

- 146 d **Calamaria linnaei**, Boie.
Isis, 1827, p. 539.
- 146 e **Calamaria javanica**, Blgr.
Ann. and Mag. Nat. Hist., (6), VII, 1891, p. 279.
- 146 f **Calamaria pavimentata** Dum. and Bibr
Erp. Gen. VII, 1854, p. 71.
- 146 g **Calamaria alidae** Blgr.
Ann. and Mag. Nat. Hist., (9), 5, 1920, p. 282.
- 146 h **Calamaria crassa** van Lidth de Jeude.
Zool. Mededeel. VI, 1922, p. 248.
- 152 a **Hypsirhina alternans** (Reuss).
Brachyorrhos alternans Reuss, Mus. Senckenb. 8, 1834, p. 155, pl. IX,
fig. 3.
- 154 a **Fordonia leucobalia** (Schleg.)
Homalopsis leucobalia Schlegel, Phys. Serp. II, 1837, p. 345 pl. XIII,
fig. 8, 9.
- 155 a **Hipistes hydrinus** (Cantor).
Homalopsis hydrinus Cantor, Journ. Asiat. Soc. Bengal, XVI, 1847,
p. 951, pl. XL, fig. 4.
- 168 a **Platurus laticaudatus** (Linn.)
Coluber laticaudatus Linn. Syst. Nat. I, 1766, p. 222
- 168 b **Platurus colubrinus** (Schneider).
Hydrus colubrinus Schneider, Hist. Amph. I, 1799, p. 238.
- 168 c **Enhydrina valakadyn** (Boie).
Hydrus valakadyn, Boie, Isis, 1827, p. 554.
- 168 d **Thallasophis anomalus**, Schmidt.
Abh. Natuw. Hamb. II, 1852, p. 81, pl. IV.
- 168 e **Hydrus platurus** (Linn.)
Anguis platura Linn. Syst. Nat. I, 1766, p. 391.
- 168 f **Hydrophis fasciatus** (Schneider).
Hydrus fasciatus Schneider, Hist. Amph. I, 1779, p. 240.
- 168 g **Hydrophis torquatus**, Gthr.
Rept. Brit. Ind. 1864, p. 369, pl. XXV, fig H.
- 168 h **Hydrophis spiralis** (Shaw.)
Hydrus spiralis Shaw. Zool. III. 1802, p. 564, pl. CXXV.
- 173 a **Callophis gracilis**, Gray.
Ill. Ind. Zool. II, 1834. pl. LXXXVI, fig. I.
- 175 a **Haplopeltura boa**, Boie.
Amblycephalus boa Boie, Isis, 1828, p. 1034.
- 177 a **Amblycephalus carinatus** Boie.
Isis, 1828, p. 1035.

FAMILY VIPERIDAE

- 184 a **Ancistrodon rhodostoma** (Boie.)
Trigonosephalus rhodostoma Boie, Isis, 1827, p. 561.

Class **BATRACHIA**ORDER **ECAUDATA**FAMILY **RANIDAE**

- 189 a **Rana limnocharis**, Weigm.
N. Acta Ac. Leop.—Carol. XVII, 1835, I, p. 255.
- 220 b **Rana novaebritanniae** Werner
Zool. Anz. 1894, p. 155.
- 211 a **Rhacophorus anodon** van Kampen
In Weber's Zool. Ergebnisse and Zool. Jahrb. Syst. XXII, 1905.

FAMILY **DYSCOPHIDAE**

- 200 a **Dyscophina volzi**, van Kampen
Zool. Jahrb. Syst. XXII, 1905, p. 703-10, pl. XXVI.

In Mitteil. Zool. Mus. Berlin, VIII, 1917, pp. 425-444, Herr H. Holtzinger-Tenever, determining a mixed collection of Reptiles from Ceylon and Sumatra, records the following amongst the species from the latter island. The occurrence in Sumatra of some of them is so surprising that we hesitate to include any in our list and simply mention them here.

- p. 431 *Gonyocephalus modestus* (Meyer). Aru Ids. to the Bismarck Archipelago.
p. 435 *Varanus flavescens* (Gray). N. India, Burma and Malay Peninsula.
p. 435 *Cabrita jerdoni* Beddome. Central and South India.
p. 436 *Mabuia carinata* (Schneider). Ceylon, India, Burma.
p. 436 *Mabuia siamensis* (Günther). Formosa, Hainan, Siam, Malay Peninsula.

The first requires confirmation, the second and fifth are very probable occurrences: it is extremely likely that the third and fourth belong to the Ceylon collection.

CORRIGENDA.

- 182 **Python bivittatus** is a synonym of *P. molurus* which is mentioned by de Rooij as doubtfully inhabiting Sumatra (Rept. Ind.-Austr. Arch. II, 1917, p. 23).
- 118 Delete **Coluber janseni**. Known from Celebes only; fide de Rooij
- 128 For **Oligodon ornatus** Roux, praeocc., read **Oligodon petronellae** Roux.
- 141 Delete **Calamaria melanota**. Known from Java and Borneo only; fide de Rooij.
- 144 For **indraginia** read **indragirica**.
- 147 Delete **Calamaria anceps** which is a synonym of *Calamaria brachyura* Blgr. Known from Borneo only.
- 183 **Lachesis borneensis** has been merged by de Rooij with *Lachesis puniceus*: though the two are very much alike they are kept distinct by Boulenger
- 303 *Nectes sumatranus* Werner, is a synonym of *Nectes subasfer* Tschud. (No. 302). For No. 303 read
Nectes pleurotaenia Fischer.
Arch. Naturg. Jg. 51, 1, 1885, p. 47



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IX. NINE NEW ORIENTAL BIRDS.

By H. C. ROBINSON AND C. BODEN KLOSS.

1. *Treron bisincta praetermissa* subsp. nov.

Larger than *T. b. bisincta* (Jerdon) from Madras (wing 144) : differs from *T. b. domvillii* (Swinh.) from Hainan in having the grey nuchal patch in the female clear and more extensive whereas, fide Hartert, it is indistinct and small in the island bird (Nov. Zool. XVII, 1910, p. 193).

Hartert has inadvertently described the Ceylon birds as being smaller than Madras individuals (*l.c.s.*) though his specimens are exactly the same size as typical birds, and *leggei* is therefore synonymous with *b. bisincta*. Swinhoe states that *domvillii* is smaller than the typical form (presumably the bird now described), but this is denied by Hartert.

The range of this race is probably from Bengal and Assam southward to the Malay States, and in the north, eastwards to China where the wing averages 156 mm. (fide Baker, India Pigeons and Doves (1913) p. 51).

Types. Adult male and female from Koh Lak, South-West Siam. Collected by H. C. Robinson and C. Boden Kloss on 5th April, 1919. Collector's Nos. 5075, 5074.

Wings 162, 161 mm.

Specimens examined. Thirteen from the Malay Peninsula. Wings 157-163 mm.

Birds from East and South-East Siam and Java (apparently first met with in the island by Kloss early in 1920) are smaller, the wing being always under 150 mm. and these may represent another race. We expect to settle the point shortly.

2. *Macropygia emiliana borneensis*, subsp. nov.

Differs from the typical race from Java (typical locality here specified as the plains of Central Java) in having the head and nape distinctly darker, the breast more amythstine, the centre of the abdomen paler, tending towards buff. Wing of type, 163 mm.

Type. Adult male collected at Lingit, Saribas, Sarawak, Western Borneo, by Native Collector in March, 1917.

Series examined. Five adult males and two females; all from Sarawak, compared with a large series of Javan birds from all parts of the island. Specimens from Java, attain a greater length of wing than any of our Bornean birds (one male, 180 mm.).

3. *Zanclostomus javanicus pallidus* subsp. nov.

Differs from *Z. j. javanicus* (Horsf.) of Java as being paler below : the rufous area less intense and the grey paler and more washed with buff.

Type. Adult male from Kedah Peak, Malay Peninsula, 2,500–3,500 ft. Collected by H. C. Robinson and C. Boden Kloss, 4th December, 1915.

Twelve specimens from Bandon to Negri Sembilan compared with fourteen from various parts of Java. A Sumatran and a Bornean example do not appear to differ from Malayan birds.

We believe that all the names which have been referred to this species apply to the Javanese form : *javanicus*, of course ; but also *Coccyzus rubrirostris* Drap., *Piaya erythrorhyncha* Less. and *P. chrysogaster* Less. *P. erythrorhyncha* was stated to come from Java and, if so, the description will only fit this bird : *P. chrysogaster* seems to be the same thing though recorded as from Guiana and we attach the name to the Javan form rather than to the other as the forehead is stated to be rusty yellow, the breast slate coloured and the abdominal region, etc., chocolate red. As a matter of fact the forehead of *javanicus* is not red ; but that colour extends upwards in front of the eyes to a much greater extent than in the race now described.

4. *Brachylophus puniceus continentis* subsp. nov

The typical race of this woodpecker from Java *B. p. puniceus* (Horsf.) is very distinct, the earcoverts being darker green and the back and rump entirely lacking any tinge or fleckings of golden yellow.

Hartert (Nov. Zool. III, 1896, p. 542) separated the birds of the Malay Peninsula, Borneo and Sumatra (type-locality) on these grounds and named them *Gecinus puniceus observandus*.

Seven Sumatran birds before us (wing 115–123) are distinctly smaller than our series from the Peninsula. For the present we content ourselves with naming the Malayan race as above.

Larger than *B. p. observandus* from Sumatra. Wing of type 132 mm.

Type. Adult male collected at Tapli, Pakchan Estuary, Renong, North Malay Peninsula by H. C. Robinson and C. Boden Kloss on 3rd March 1919. Collector's No. 4382.

Specimens examined. Seventeen from Chumporn to Negri Sembilan. Wings 123–136 mm.

Six Bornean birds have the wings 118–126 mm. and seem to average about the same size as the Sumatran form with which we leave them.

5. *Eupetes macrocerus borneensis* subsp. nov.

Like *E. m. macrocerus* Temm. of Padang, Sumatra, and of the Malay Peninsula (*E. m. griseiventris* Baker) but rather more deeply and richly coloured.

Compared with a topotype from West Sumatra and six adults from the Malay Peninsula.

Type. Adult male from Samarahan, South Sarawak, obtained on 25th. November 1919 by F.M.S. Museums' Collector.

Specimens examined. The type, five from the Baram district and one from Penrisen, Sarawak, Borneo.

Measurements of the type : length, 270 ; wing 93 ; tail 122 ; tarsus 41 ; bill from gape 33 mm.

6. *Dryocathopus tickelli australis*, subsp. nov.

Southern birds from Bandon to the southern limit of the species in Selangor, where it is strictly a montane bird, are decidedly richer coloured both above and below than typical ones.

Types. Adult male and female from Ginting Bidei, Selangor 2,300 ft., 5th and 16th April, 1917, collected by C. Boden Kloss.

"Iris crimson, maxilla brown, mandible yellowish fleshy, feet fleshy."

Wing ♂ 66 : ♀ 64 mm.

Specimens examined. Twenty-seven from Bandon, Trang, Perak and Selangor.

7. *Malacocincla sepiaria barussana*, subsp. nov.

Type. Adult female, Siolak Dras, Korinchi, West Sumatra, 3,000 ft., collected on 18th March, 1914, by H. C. Robinson and C. Boden Kloss.

Differs from the Javan forms of *M. sepiaria* in darker colouration ; back reddish russet, tail more rufous chestnut, foreneck greyer, breast and abdomen darker suffused with russet ; white centre to the abdomen reduced. Crown dark as in *M. s. minor* (Meyer) of E. Java.

From the Malayan form *M. o. tardinata*, Hartert, it differs in having a distinctly dark cap and deeper colour throughout.

Specimens examined. Fourteen from various localities in West Sumatra, compared with seven from East and Mid-Java and thirteen from the Malay Peninsula.

8. *Horizillas rufifrons indochinensis*, subsp. nov.

Setaria rufifrons Robinson, Ibis 1915, p. 748 (S.E. Siam).

Setaria lepidoccephala Kloss, Ibis 1918, p. 203 (E. & S.E. Siam) ; id., Journ. Nat. Hist. Soc. Siam, III, 1919, p. 450, Robinson and Kloss, Ibis 1919, p. 582 (Cochin China).

Differs from *H. rufifrons* inhabiting Java in having the feathers of the forehead and crown more strongly black-tipped and the nape darker ; paler above ; tail browner, rather less brightly rufous, the lowest upper tailcoverts distinctly less so. Size apparently rather smaller (15 Javanese birds, wings 69-81 : 20 Indochinese, 67-75 mm.).

Types. Adult male and female from Trangbom, Cochinchina, collected on 4th June and 31st May by C. Boden Kloss.

T. L. 152, 160 ; Tail, 67, 71 ; Wing, 71, 76 ; Tarsus ; 19.5, 21 ; B.f.g. 17.5, 19 mm.

Setaria rufifrons was described by Cabanis as from Sumatra or Java. Büttikofer has deliberately attached *leptocephala*, Gray, to Javanese birds and they will have to bear that name if different from Sumatran examples : but Sharpe, after inspecting specimens in Leyden stated that the differences he noted in the "Catalogue" did not exist.

As several Javanese birds have wings of 79 to 81 mm. Finsch's statement that the wing of the type of *rufifrons* measures 80 mm. (3 inches of Cabanis) is confirmed.

This is one of the species which, though occurring in Indo-China and the Sunda Islands, is not found in the Malay Peninsula.

(*Horizillas* Oberholser, replaces *Malacopteron* Eyton and *Setaria* Blyth : vide, Smithsonian Miscellaneous Collections, 48, 1905, p. 64).

9. *Prionochilus maculatus septentrionalis* subsp. nov.

Male. Differs from the form inhabiting the southern part of the Malay Peninsula (20 specimens from the Malay States compared) in having the ear-coverts much greyer, hardly if at all washed with green ; the white throat stripe narrower and the yellow of the underparts considerably brighter, becoming almost orange chrome on the middle of the breast.

Female. Differs in a similar manner from the female of the southern race.

Iris red or reddish ; maxilla black, mandible slate, the tip sometimes black ; feet dark slate or slaty black.

Ten specimens examined from the Northern Malay Peninsula (Lat. 10°–11° N.)

Types. ♂ ad. Tasek, Chumporn, 13th March, 1919. H. C. Robinson and C. Boden Kloss, No. 4548, ♀ ad. Tapli, Pakchan Estuary, Renong, 3rd March, 1919. H. C. Robinson and C. Boden Kloss, No. 4393.

X. NEW AND KNOWN ORIENTAL BIRDS.

By C. BODEN KLOSS, M.B.O.U., C.F.A.O.U.

ON THE PROPER NAME OF THE BLACK DRONGO WITH
DESCRIPTIONS OF TWO NEW SUBSPECIES.

The name by which the Black Drongo has hitherto been known specifically, *Dicrurus atra* (*Muscicapa atra* Hermann, Obs. Zool. 1804, p. 208 : Tranquebaria, S. India) is preoccupied by *Muscicapa atra* Gmelin (Syst. Nat. ed. 13, 1, 1788, p. 946) and *Dicrurus macrocercus* Vieillot, must replace it.

All the following are based on "Le Drongolon" of Levaillant (Ois. d'Afr., iii, 1802, pl. 174) so all belong to the same bird : but *macrocercus* has priority :—

<i>Dicrurus macrocercus</i> Vieillot, 1817	
<i>Muscicapa biloba</i> Lichtenstein, 1823	"Ind. Orient"
<i>Dicrurus indicus</i> Stephens, 1826	"India"
<i>Dicrurus longus</i> Bonaparte, 1852	"Java"

Levaillant, however, recorded no locality for "Le Drongolon," nor did Vieillot for *macrocercus* ; and we have, therefore, to look for a "terra typica" among the others.

The "Ind. Orient" of Lichtenstein is too vague to supply the need as it merely means the East Indies of Asia as distinguished from the West Indies of America and there are several races of Black Drongo.

But Stephens' *Dicrurus indicus*, "India" is quite definite and must therefore be accepted as the typical locality for "Le Drongolon" and, therefore, for the first Linnean name, *macrocercus*, applied to it which, by the subsequent description of the northern Indian form as *albirictus* by Hodgson in 1837, becomes by elimination the name of the Peninsular Indian subspecies.

Bonaparte's citation of Bengal for *macrocercus* (Consp. Av. I, 1850, p. 351) confirms this selection and his attribution of Java to *longus* (t.c.p. 352) and Walden's of the same place to *macrocercus* (Journ. Asiat. Soc. Bengal, 1875, pt. 2, Extra No., p. 129), though he says quite rightly that both these are the same bird, come too late ; while the reference of *biloba* to Java by Cabanis (Mus. Hein I, 1850-1, p. 111) cannot be accepted.

Thus are ruled out for further use all names based on "Le Drongolon."

The races of the Black Drongo, *Dicrurus macrocercus*, therefore are :—

1. *Dicrurus macrocercus macrocercus* Vieill. (syn. *biloba*, *indicus* and *longus*), Nouv. Dict. IX, 1817, p. 588 : Peninsular India.
2. *Dicrurus m. albirictus* (Hodgs.), Ind. Rev. 1837, p. 326 : Nepal.
3. *Dicrurus m. minor* Blyth, Layard. Ann. & Mag. Nat. Hist. (2), XIII, 1854, p. 129 : Ceylon.
4. *Dicrurus m. cathoecus* Swinh. (syn. *siamensis* Kloss), P.Z.S. 1871, p. 377 : Southeast China.
5. *Dicrurus m. harterti* Baker, Nov. Zool. XXV, 1918, p. 299 : Formosa.
6. *Dicrurus m. thai* Kloss : Siam (postea).
7. *Dicrurus m. javanus* Kloss : Java (postea).

Dicrurus macrocercus thai subsp. nov.

Like *D. m. macrocercus* of Peninsular India but with the wing shorter and the white rictal spot rarely present instead of rarely absent (present once in ten only : whereas in *D. m. macrocercus* it is absent once in ten according to Baker in Nov. Zool. XXV ; 1918, p. 277).

Differs from *D. m. cathoeca* in having a shorter bill and wing while the median feathers of the tail are always shorter but the outermost generally longer.

Specimens examined. Twenty from S. Tenasserim, S.W. and Central Siam and South Annam. Wing 123-140 ; Tail, outermost feathers, 150-178, median feathers, 100-108 ; bill from gape 23-25.

Type. Adult male, No. 4975. Collected at Koh Lak, S.W. Siam, 3rd April 1919, by H. C. Robinson and C. Boden Kloss.

"Iris dark brownish red, bill and feet black."

Total length 296 ; wing 135 ; tail 177-105 ; bill from gape 25 mm.

Dicrurus macrocercus javanus subsp. nov.

Like *D. m. thai* but with a larger bill (practically equal in size to that of *D. m. cathoeca*).

Specimens examined. Twelve from East Java and Mid-Java. Wing 129-139 ; tail, outermost feathers, 147-166, median feathers, 101-114 ; bill from gape, 24-27.

Type. Adult male No. 5953. Collected at Badjoelmati, Besoeki, E. Java, 3rd February 1920, by C. Boden Kloss.

"Iris dark, bill and feet black."

Total length 296 ; wing 139 ; tail 157 ; bill from gape 26 mm.

ON THE RUBY-CHEEK WITH DESCRIPTIONS OF
THREE NEW SUBSPECIES.

Having assembled a large series of *Chalcoparia singalensis* from Indo-China and Malaysia I take the opportunity to review the races occurring on the mainland and the large islands.

Beginning with the northern specimens of the series I recognise the following forms :—

1. *Chalcoparia singalensis koratensis* Kloss.

Kloss, Ibis 1918, p. 218 (Korat, E. Siam).

Males with the rufous of the foreneck not extending so far downwards as in other races and terminating abruptly on the upper breast. Remaining lower parts a markedly brighter, less greenish yellow.

Females with lower parts brighter than in the typical race *C. s. singalensis*.

Specimens examined from North Siam, East Siam (topotypes), South-East Siam, South Annam (14 ♂, 9 ♀)

2. *Chalcoparia singalensis interposita* Robinson and Kloss, subsp. nov.

Males with rufous of foreneck extending over the upper breast and ending gradually. Remaining lower parts not so brightly yellow as in *C. s. koratensis* but less greenish than in *C. s. singalensis*.

Females like *C. s. koratensis*.

Specimens examined from Bangkok, Siam, south through the North Malay Peninsula to lat. 6° 30' N. (11 ♂, 7 ♀).

Types. Adult male from Takuapa, West Coast Peninsular Siam. Collected by H. C. Robinson and C. Boden Kloss on 18th February, 1919. Adult female from Ban Kok Klap, Nakon Sri Tamarat. Collected by H. C. Robinson and E. Seimund on 30th June, 1913.

3. *Chalcoparia singalensis singalensis* (Gmelin).

Motacilla singalensis Gmelin Syst. Nat. I, 1789, p. 964 (Malacca : Oberholser det.).

Males with rufous of foreneck and upper breast as in *C. s. interposita* but with remaining lower parts a rather greener yellow.

Females with the breast and abdomen distinctly greener than in *koratensis* and *interposita*.

Specimens examined from Perak to Johore, South Malay Peninsula (12 ♂, 9 ♀).

4. *Chalcoparia singalensis sumatrana* Kloss, subsp. nov.

Males with the rufous of the foreneck and breast extending still further down towards the abdomen and the latter more tinged with green than in *C. s. singalensis*.

Females rather more greenish below than in *C. s. singalensis*.

Specimens examined from the Ophir to Bencoolen districts. Western Sumatra; and Deli, North Eastern Sumatra. (9 ♂, 5 ♀).

Types. Adult male from Mt. Talamau, 400 metres, and female from Tanangtalau, 1,000 metres, Ophir district, Central Sumatra. Collected by E. Jacobson on 27th April, 1917 and 10th May, 1915. Collector's numbers 891 and 4,553.

5. *Chalcoparia singalensis borneana* Kloss, subsp. nov.

As in *C. s. interposita* but rufous of the foreneck and upper breast rather deeper in both sexes.

Specimens examined from various part of Sarawak. (19 ♂, 14 ♀).

Types. Adult male from Bukar, Samarahan, Sarawak, obtained by F.M.S. Museums collector on 26th October,

1919; and adult female from Kuching, Sarawak, obtained on 24th May, 1892 (ex Sarawak Museum).

6. *Chalcoparia singalensis phoenicotis* (Temminck).

Nectarinia phoenicotis Temminck, Pl. Col. 1824, No. 108, fig. 1 (♂); No. 388 fig. 2 (♀) (Java).

Males as in *C. s. singalensis* but rufous of the foreneck and upper breast deeper: abdomens less bright than in *C. s. borneana*.

Females with the rufous of the foreneck much deeper than in the females of any other race (as deep as in the males); not extending on to the upper breast and ending abruptly as in males of *C. s. koratensis*; but still more restricted. Lower breast and abdomen bright as in *koratensis* and *interposita*.

Specimens examined from East, Mid and West Java (7♂, 3♀).

Chalcoparia singalensis panopsis Oberholser (Smiths. Misc. Coll. 60, 1912, p. 21) of Nias Id., West Sumatra, is described as having the females with the posterior lower parts more brightly yellowish than in *C. s. singalensis*. It must, therefore, be quite distinct from the adjacent race *C. s. sumatrana*.

Of the males *C. s. koratensis*, of the females *C. s. phoenicotis* is the most distinct.

When I stated, Ibis 1918, p. 218, that birds from the Malay Peninsula, Sumatra and Java were alike my material was inadequate, consisting from the latter places of one Sumatran male only and four old mounted males of faded colours from Java. *C. s. phoenicotis* is a very distinct form on account of the characters of the female: *C. s. sumatrana* less so; but sufficiently distinguished to need separation.

A NEW RACE OF SHAMA FROM JAVA.

Kittacincla malabarica javana subsp. nov.

Sexes alike in colour and paler below than the males of *K. m. tricolor* (Vieillot). Typical locality Bantam, W. Java: Robinson and Kloss det.¹) and with white, not rusty thighs: like the males of *K. m. omissa* Hartert (Nov. Zool. IX, 1902, p. 572. Lawang, E. Java) but without the indistinct white border to the black breast.

Types. Adult male (No. 6277) and female (6112) collected by C. Boden Kloss, 23rd and 18th February 1920,

¹ Extract from M.S. "We consider that Vieillot's citation of the locality of his *Turdus tricolor* (Nouv. Dict. Hist. Nat. XXX, 1818, p. 291) "les isles de la mer du sud" is at least as precise as Hartert's subsequent fixation as "India" (Nov. Zool. IX, 1902, p. 571). Further the description by Scopoli in 1786 (Del Flor. Faun. Insubr., II, p. 97) of the Malabar bird as *Muscicapa malabarica* should prevent "India" being selected for a typical locality. We have, therefore, further fixed the typical locality of *Turdus tricolor* as Western Java." H. C. Robinson and C. Boden Kloss.

at Karangbolang, South Coast of Mid-Java (not Karangbolang of Noesa Kambangan Id.).

Specimens examined. Three males and one female from the type locality : compared with two males and one female from Pandeglang District, N. Bantam ; one male and one female from Wynkoop's Bay, S.W. Coast of Java ; and with two males and one female of *K. m. omissa* from Badjoelmati, E. Coast of Java.

A second male from Wynkoops Bay is intermediate between *tricolor* and *javana* ; a little lighter below than the first, somewhat darker than the latter with white thighs slightly washed with rusty.

Hartert states (l.c.s.) that the female of *omissa* is exactly like the male in colouration but my specimen is distinctly paler below—almost as pale as females of West Javan *tricolor*. The female of *javana*, being like the males, is darker than either of the others.

Measurements of *K. m. tricolor* from Pandeglang¹ and Wynkoops Bay.

T. L. ♂ 277*, 273, 245 ; ♀ 242*, 210. Tail, 163*, 175, 145 ; ♀ 126*, 105. Wing, ♂ 96*, 97, 94 ; ♀ 90*, 85. Tarsus, 26*, 26, 28 ; ♀ 25, 24. Bill from gape, 24*, 24, 23.5 ; ♀ 22*, 22.

K. m. tricolor > *javana* from Wynkoops Bay.

T. L. ♂ 261. Tail, 142. Wing, 97. Tarsus, 27. B.f.g. 24.

K. m. javana from Karangbolang.

T. L. ♂ 251†, 255, 258 ; ♀ 206†. Tail, ♂ 139†, 142, 138 ; ♀ 102†. Wing, ♂ 93†, 89, 92 ; ♀ 86†. Tarsus, 25†, 27, 26 ; ♀ 25†. B.f.g. 23†, 23, 24 ; ♀ 23†.

K. m. omissa from Badjoelmati.

T. L. ♂ 257, 245 ; ♀ 195. Tail, ♂ 144, 130 ; ♀ 91. Wing, ♂ 92.5, 90 ; ♀ 81. Tarsus, ♂ 25.5, 27.5 ; 24 ; ♀ 20. B.f.g. 21, 23 ; ♀ 20 mm.

All collected and measured in the flesh by myself between February and April 1919.

* Neo-types.

† Types.

NEW AND OTHER BIRDS FROM N.E. SUMATRA.

Amongst a small collection of birds from Deli, N.E. Sumatra, and the Karo lands sent me for determination by Jonkheer F. C. van Heurn the following are of interest :—

Spizaetus alboniger Blyth.

Spizaetus alboniger de Beaufort, in "Versl. en Med. der Nederl. Ornith. Vereen." No. 6 (September 1909) Mid Sumatra

1 ♀ Bandar Baroe, Upper Deli, 30.7.20. Wing 365. A fine adult example.

¹ A male has a large irregular white patch covering the side of the throat and the foreneck.

Hemicercus concretus coccometopus Reichenb.

2 ♂ from Simpang Toba, Asahan, 10.5.20, and Batang Koeis, Deli, 16.6.20. Wings 83, 84 mm.

Cyornis elegans Temm., subsp.?

1 ♀ from Soengei Tassik, Langkat, 8.7.20. Wing 72 mm.

Since I returned Jonkheer van Heurn's collection I have received Dr. Oberholser's description of *Cyornis elegans rupaensis* (Proc. Biol. Soc. Washington, 33, 1920, p. 87) from Rupa Strait, about 250 miles down coast from Langkat. This is stated to be like *C. e. elegans* from Northern and Western Sumatra, but much darker above and on the throat, breast darker, posterior lower parts more ochraceous. The bird from Langkat (Lat. 4° N.) belongs to the typical race.

Eupetes macrocerus macrocerus Temm.

1 ♂ Soengai Tassik, Langkat, 30.6.20. Wing 97.

Not differing in any way from specimens in a Malayan series.

Apparantly a new record for Sumatra :—

Hemichelidon sibirica fuliginosa.

1 ♂ Karolanden, 1,000 metres, 8.11.19. Wing 78 mm.

New subspecies :—

1. **Pitta granatina vanheurni** subsp. nov.

Pitta granatina de Beaufort and de Bussy, Bijdr. tot de Dierk. Afl. XXI, 1918 (?), p. 259 (N.E. Sumatra) ; Senouckaert, Club van Nederl. Vogelk. Jaarb. No. 10, 1920, p. 115 (N.E. Sumatra).

Like *Pitta granatina coccinea* Eyton, of the Malay Peninsula but developing a markedly larger bill. The large bill and the narrower black frontal area in addition still more clearly distinguish it from *P. g. granatina* Temm. of Western Borneo.

Wing 89, tail 37, tarsus 40, bill from gape 30, from anterior edge of nostril 18 mm.

Type. Adult male from Soengai Tassik, Langkat, N.E. Sumatra. Collected by Jonkheer F. C. van Heurn on 7th July, 1920. Compared with 25 examples of *P. g. coccinea* and 25 of *P. g. granatina*.

Jonkheer van Heurn has also sent a second male from Alas Teurba near Lho Seumaweh, Acheh (13th September, 1920) ; but it is an immature bird with red tips to many of the breast feathers : wing 95 ; tail 43 ; tarsus 38 ; bill from gape 27, from anterior edge of nostril 14 mm.

2. **Thringorhina striolata umbrosa** subsp. nov.

More russet and much darker above than *T. s. striolata* (S. Müller) from West Sumatra south of Padang (18

specimens examined) : crown, nape, back (except the lower rump which is russet), wings and tail being much more strongly washed with black

Three specimen examined, all from the same locality.

Type. Adult male from Bandar Baroe, Upper Deli, N.E. Sumatra, 800 metres. Collected by Jonkheer F. C. van Heurn on 21st August 1920.

Wing 67*, 65, 65 ; tail 60*, 60, 62 ; tarsus 23*, 24, 23 ; bill from gape 21*, 21, 20 mm.

The type locality of Müller's *Timalia striolata* may be taken as the Padang Residencies, Central West Sumatra.

* Type.

XI. NOTES ON SOME ORIENTAL BIRDS.

BY C. BODEN KLOSS, M.B.O.U., C.F.A.O.U.

HALCYON (SAUROPATIS) CHLORIS.

Either together or separately Mr. H. C. Robinson and I have hitherto not seen our way to accept all the races of Malaysian Blue-and-white Kingfishers that Dr. H. C. Oberholser recognises and proposes (Proc. U. S. Nat. Mus. 55, 1919, pp. 351-395). But now with about 80 specimens from Bangkok, south through the Malay Peninsula to Johore; 8 from North-east Sumatra; 16 from Benkoolen, the Padang districts and Korinchi, West Sumatra (*C. cyanescens* Oberh.) ; and 18 from all parts of Java (*C. palmeri* Oberh.) I have to revise my opinions somewhat.¹

I cannot perceive all the differential characters Oberholser gives in his key and diagnoses : however, in the large series of continental birds I find a few males—a distinct minority—that are a deeper, less greenish blue than the others and these make the series as a whole look more blue ; as stated, there is frequently a pronounced wash of buff on the flanks which the others lack : the continental birds are certainly smaller : and so are eight specimens from the Deli district of North-east Sumatra, which on this account I should rank with them, though Oberholser says that East Sumatran birds as far north as Deli are *cyanescens*. The wings of my continental birds range from 97 to 106 mm. ; those of the Deli examples from 96 to 104 mm. : and those of the West Sumatra specimens from 104 to 112 mm.

Oberholser considers that birds from the Sunderbunds to Singapore are all *armstrongi* (type, a Siamese skin of Gould's collection), and that birds called *humii* by Sharpe (type, a Selangor bird of Hume's collection) are inseparable : but I find, on the contrary, that the great majority of birds from the Malay Peninsula have the earcoverts more blackish, or of a darker different blue, than the birds of the Inner Gulf of Siam which have the earcoverts of the same blue as the crown though sometimes a trifle darker in tint ; and on this ground, and because of a deeper buffy wash on the flanks and of a pronounced black nuchal band in most of the specimens (obsolete or absent in the Siamese birds) *humii* may be maintained for birds of the Peninsula, south of the Isthmus of Kra and for those of North-east Sumatra. There seems to be no difference in size : the wings of the 24 more Northern birds (*armstrongi*) range from 98 to 106 mm. ; those of the Peninsular series from 97 to 106 mm. and those of the Sumatran set of *humii* from 96 to 104 mm.

Sauropatis chloris cyanescens Oberh. (op. cit. 52, 1917, p. 189 : type from Pulau Taya, Southern China Sea, north

¹ I am indebted to Mr. W. J. F. Williamson, C.M.G., for the loan of 24 examples from the head of the Gulf of Siam ; to Heer E. Jacobson for a dozen from West Sumatra and to Heer. A. C. F. A. van Heyst for examples from North-east Sumatra.

of Banka Id.) is defined as from Sumatra to Borneo and the islands along its east coast with all the intervening islands; also Bawean and various islets in the Java Sea. Placed with this race must be a pair from Pulau Mapur, the easternmost island in the Rhio Archipelago south of Singapore, (wings 110 mm.).

Apart from colour differences which I cannot find, *S. c. palmeri* Oberh. (tom. cit. p. 368 : type from Mt. Salak, W. Java : supposed to be confined to Java), is said to be distinguished from *cyanescens* by a slightly smaller bill : the measurements given for the exposed culmen¹ are :—*cyanescens* (75 examples) 41.5–47.3*–53.5 mm. ; *palmeri* (25 specimens) 42.5–45.9*–50 mm. [i.e., within the range of *cyanescens*]. The bills from gape of my West Mid-Sumatran specimens of *cyanescens* measure :—52–56.4*–60 mm. ; of my Javan birds 55–57.2*–60 mm. : the converse of Oberholser's findings.

Averages seem to be untrustworthy as they differ with different series : both series attain similar maxima and the smaller-billed Sumatran birds *may* be immature though they have no appearance of this. I cannot separate the Javan birds before me from *cyanescens* : my series of the former has a wing range of 103–116, and the latter 104–112 mm.

HALCYON (ENTOMOTHERA) COROMANDA.

Dr. Oberholser has also reviewed the races of the Ruddy Kingfisher, *Halcyon (Entomothera) coromanda* (op. cit. 48, 1915, pp. 639–657) and of Malaysian races which he recognises, we have material of the following :—

1. *Halcyon coromanda coromanda* (Lath.).

Southern continental birds are all considered to belong to this subspecies, which occupies Indo-China and the Malay Peninsula, south to Malacca : Rangoon is selected for the type locality.

This is the largest of the Malaysian forms and the palest both above and below, being not, or comparatively little, washed with magenta on the breast [and on the upper surface, especially the head]. The wing length ranges from 111 to 119 mm. [Nine practically adult specimens examined by Oberholser, five from India, one from China, three from the Malay Peninsula].

¹ I do not like this measurement : the posterior point is not fixed as the forward spread of the frontal feathers, it is very variable. For instance, in two birds which have the same length of bill from the gape and from the anterior edge of the nostril, there is a difference of 3 mm. in the length of the exposed culmen. Both of the lengths mentioned, which are between fixed points, are preferable.

* Average.

2. *Halcyon coromanda minor* (Temm. & Schl.).

This is recognised as inhabiting Borneo with various coastal islands, and also Singapore. Pontianak is selected as the typical locality.

It is a darker bird, particularly below [and also much more washed with magenta on head and upper parts generally]: it is also smaller, the wings ranging from 99 to 104 mm. [Five adult specimens examined by Oberholser, three from Borneo, two from Singapore].

We have no examples of West Sumatran birds which are named by Oberholser *coromanda neophora* (type locality, Tapanuli Bay, Western Sumatra, opposite Nias Id.): they are characterised as being like *c. coromanda*, but smaller; lower parts darker and breast more washed with magenta, wings 100–111 mm. [Five practically adult specimens examined by Oberholser, two only from Western Sumatra]. The habitat is given as Sumatra; and probably Banka Id. This race appears on the characters given to be very like *minor*, but a little larger [and perhaps paler above]: but Oberholser's material was small in both cases.

It has already been pointed out¹ that all Sumatran birds are not *neophora*; four examples from Deli in the North-east of Sumatra being undoubtedly *c. coromanda*, (though Oberholser regards his only specimen from N. E. Sumatra, a juvenile female from Aru Bay, a little to the north of Deli, as *neophora*). This is not surprising as birds taken on Pulau Jarak, the Aroa Islands and the One-fathom Bank Lighthouse in the Straits of Malacca are *c. coromanda* and it is highly improbable that they were resident on any of these places.

Thus the range of *c. coromanda* must be extended to North-east Sumatra.

To the distribution area of *minor* must be added Johore, birds from the south of that State being indistinguishable from those of Singapore Island adjacent.²

The wing measurements of our specimens are:—

H. c. coromanda :—

Malay Peninsula, Langkawi and Terutau Ids. (8 spms.)	..	..	105—116 mm.
Straits of Malacca (17 spms.)	..	..	112—118 "
North-east Sumatra (4 spms.)	..	..	110—117 "

H. c. minor :—

Borneo (2 spms.)	..	..	100—102 "
Singapore (4 spms.)	..	..	102—104 "
Johore (4 spms.)	..	..	103—111 "

Dr. Oberholser's measurements for the wings of his two topotypes of *neophora* are; ♂ 100, ♀ vix ad. 111 mm.

¹ *Halcyon coromanda coromanda* Robinson & Kloss, Journ. Straits Branch Roy. Asiat. Soc. No. 80, 1919, p. 87.

² Hartert has already stated that birds from the southern part of the Malay Peninsula are *minor* (Vög. pal. Fauna, II, 1912, p. 887).

It seems to me that a difference between Bornean and Sumatran birds is as yet "not proven" : Dr. Oberholser's material from each place was very limited and it may be noted that he was unable to distinguish between specimens of *Halcyon chloris* from those areas.

CHRYSOCOLAPTES STRICTUS CHERSONESUS Kloss.

Ibis, 1918, p. 113 (Singapore and Johore).

Chrysocolaptes gutticristatus chersonesus Robinson, Ibis, 1919, p. 181 ; Robinson and Kloss, Journ. Straits Branch Roy. Asiat. Soc. No. 81, 1920, p. 80.

Chrysocolaptes gutticristatus de Beaufort and de Bussy, Konink. Zool. Genoots. "Natura Artis Magister" XXI, 1918 (?) p. 257.

Chrysocolaptes guttacristatus delesserti Baker Ibis 1919, p. 197.

Mr. Stuart Baker denies the validity of this race, because he believes that birds from Johore have wings as long as 170 mm. : but he has evidently made a bad geographical error in attributing to the extreme south of the Malay Peninsula, the specimens which he thinks come from Johore (Query : Jalor in Patani).

This subspecies, described on account of its small size, has now been found to extend to the islands of the Rio Archipelago and to Sumatra. I have examined the following specimens :—

♂ Si Karang, Johore (cotype).	Wing 150.	Bill from gape 45
♂ " " "	" 143	" " 43
♂ Singapore Island (cotype).	" 143.	" " 48
♂ " " "	" 146.	" " 45
—Kundur Id., Rio Arch.	" —	" " —
♂ Deli Dist. N.E. Sumatra.	" 150.	" " 48
♀ " " "	" 143.	" " 43

Wings 143–146*–150 mm. Bills from gape 43–45*–48 mm.

PHILENTOMA VELATA CAESIA (Less.).

The type locality of *Drymophila velata* Temm. (Pl. Col., No. 334, 1825), is Java as the species does not occur in Timor or the Moluccas.

Birds from Sumatra, Malay Peninsula and Borneo differ from those of Java in having more black on the throats in males ; while the throats of females are blackish blue, distinctly darker than the breasts.

Birds from each of these areas have received a name as follows :—

Monarcha caesia Less., Rev. Zool. 1839, p. 167 (Sumatra).

Muscicapa pectoralis Hay, Madras Journ. XIII, 1844, p. 161 (Malacca).

Philentoma unicolor Blyth, Ibis 1865, p. 46 (Borneo).

But all are alike and all must stand as *caesia*.

Specimens examined. Java, 4 ♂, 5 ♀ ; Sumatra, 3 ♂, 3 ♀ ; Malay Peninsula 12 ♂, 15 ♀ ; Borneo, 3 ♂, 3 ♀

* Average.

PHILENTOMA PYRRHOPTERA (Temm.).

Philentoma saravacense Bartlett, Sarawak Note-book, pt. IX (1896), p. 80.

This name was given by Bartlett to a blue flycatcher from the neighbourhood of Kuching. I have seen the type, a male, which belongs to the Sarawak Museum. It is of exactly the same size as *Philentoma pyrrhoptera* [*Muscicapa pyrrhoptera* Temm., Pl. Col. 1823, No. 596, fig. 2 (error! read 1) Borneo and Sumatra], but is of the same blue all over as the foreparts, except on the abdomen where the blue of the breast gradually changes more or less into sullied white.

Agreeing with the type are six other specimens for the moment in my hands :—a male and female (?) from Sarawak, two males from the Malay States, and two males from Sumatra. One of the Malayan specimens has the flanks slightly tinged with russet.

It has been suggested that this bird is the young of *P. velata*, but I am sure this is not so. It belongs to *P. pyrrhoptera*, of which, it seems to be an aberration—though as shown a comparatively common one—and is not a distinct species. The colour of the young male *P. pyrrhoptera* is apparently that of the adult female but rather paler on the throat.

Philentoma intermedius Hume, Stray Feathers, IX, 1880, p. 113.

This name was given to a female from Johore—an aberration like that named *saravacense* by Bartlett. As usual Hume's description is very full.

Philentoma maxwelli Bartlett Journ. Straits Branch Royal Asiatic Soc. No. 28, 1895, p. 96.

This name was given also to a Sarawak bird which is an ordinary male *P. pyrrhoptera* except for an irregular chestnut patch on one side of the blue breast—an abnormality I find in a Malayan example as well. I am indebted to the authorities of the Sarawak Museum for lending me the Bornean types of the synonyms. Malaysian birds are not separable into subspecies.

CRYPTOLOPHA TRIVIRGATA.

Since we commented on Sumatran examples of *Cryptolopha trivirgata* (Journ. Fed. Malay States Mus. VIII, pt. 2, 1918, p. 167), the F.M.S. Museums have obtained a large series of this bird from Java and now comparing with them an equally large Sumatran series, I can detect no differences : the birds of the Sunda Islands are larger than other Malaysian birds and are of the typical form *C. t. trivirgata* (Strickl., type locality, Java)¹.

¹ See, however, Nov. Zool. XXVII, 1920, p. 462 where Hartert States there is no difference in wing length. But the series on which my remarks are based is much larger than any other assembled.

In 1912 Dr. E. Stresemann found that Malayan birds were smaller than the Sondaic form and named them *Phylloscopus t. parvirostris* (Nov. Zool. XIX, p. 322, Mt. Tahan, 5,200 ft.). He omitted, however, to compare them with Bornean material, named by Sharpe *C. t. kinabaluense* (Bull. B.O.C. XI, 1901, p. 60). Sharpe described this as having a duller crown stripe, whitish underparts and a less yellow colour generally.

But when referring his material earlier to *Cryptolopha trivirgata* (Ibis, 1888, p. 202), Sharpe noted that amongst it, besides specimens as described, were a few examples of typical appearance : and he surmised that the latter were young birds. I think the reverse is more probably correct for I have immature specimens from Java and the Peninsula which approximate to his description.

An adult skin (wing 56 mm.) from Gunong Tanabo, N. Sarawak, does not differ from Malayan birds : one cannot dogmatise with a single specimen, but if it is typical of the adult *C. t. kinabaluense* then Malayan birds may have to bear that name with *C. t. parvirostris* as a synonym.

LALAGE FIMBRIATA.

I have been able to bring together series of *Lalage fimbriata* (Temm.) from Java, Malay Peninsula, Sumatra and Borneo. There is some lack of uniformity in each series, because immature males are paler than fully adult males in some races ; but having regard to adult birds only my conclusions are as follows :—

1. *Lalage fimbriata fimbriata* (Temm.).

Cebblephyrus fimbriata Temminck Pl. Col. Nos. 249 (♂) and 250 (♀).
Java.

Males perhaps a little darker than males from Malacca, Sumatra and Borneo, but only doubtfully so.

Females distinct : darker below, but less clearly banded (bars greyer, less black) owing to a general grey suffusion or clouding except on the throat and under tail-coverts where the ground colour is white.

The largest form : wings 99–107 mm. (9 ♂, 4 ♀).

Confined to Java.

2. *Lalage fimbriata culminata* (Hay).

Cebblephyrus culminatus Hay, Madras Journ. Lit. & Sci. XIII, 1844, p. 157. Malacca.

Males not distinguishable from Javanese males.

Females much whiter and more clearly banded below.

Wings : Malay Peninsula, 95–100 (2 ♂ 4 ♀) ; Sumatra 91–98 (6 ♂ 3 ♀).

The Malay Peninsula south of Lat. 3° N. and Sumatra

3. *Lalage fimbriata schierbrandi* (Pelz.).

Volvocivora schierbrandii Pelzelin Novara Reis. Vögeln, 1865, p. 80, taf. 11, fig. 1. Borneo.

Volvocivora borneensis Salvadori, Atti R. Ac. Sc. Tor. III, 1868, p. 532. Borneo.

Abdomen and undertail-coverts in males a trifle paler than in either *f. fimbriata* or *culminata*; but less white than in *neglecta*.

Females inseparable from those of *culminata*.

The smallest form: wings 90–95 mm. (9 ♂ 3 ♀ from Sarawak).

Confined to Borneo.

4. *Lalage fimbriata neglecta* (Hume).

Volucivora neglecta Hume, Stray Feathers, V, 1877, p. 203. Extreme south of Tenasserim.

Males paler grey throughout than those of the above three races; heads and mantles not becoming blackish: abdomens and undertail-coverts white or whitish.

Females inseparable from all but the Javan race.

Wings 94–106 mm. (10 ♂ 8 ♀).

From Southern Tenasserim down to about Lat. 6° N. in the Malay Peninsula.¹

Males from between Lat. 6° and 3° N. in the Peninsula are intermediate between *culminata* and *neglecta*, but on the whole are nearest the latter: in the abdomen and lower tail-coverts they resemble *schierbrandi*, but do not appear to develop the dark head and back of the Bornean bird. Wings 94–105 (5 ♂ 6 ♀).

MALACOCINCLA SEPIARIA.

In the Trans. Linn. Soc. (XIII, 1822, p. 158) Horsfield described *Brachypteryx sepiaria* from Java and in the Zeitschrift für die Gesammte Ornithologie (I, 1884, p. 21) Meyer described *Turdinus sepiarius* var. *minor* from the same island. In Notes from the Leyden Museum (XVII, 1895, p. 82) Buttkofer considered that the latter author could rightly do this as Horsfield's *sepiaria* was the paler-headed bird. This is actually the case.

I recently obtained in Java, birds which Mr. E. C. Stuart Baker has kindly compared for me with Horsfield's types in the British Museum. The latter represent the paler-headed form, so I am now able to definitely state that *Malacocincla sepiaria sepiaria* (Horsf.) is the Western and *Malacocincla sepiaria minor* (Meyer) the Eastern Javanese form.

Though the individuals of Meyer's type series have wings much smaller than my specimens, or any others on record from Java, it is accepted that they do represent a form of *sepiaria*.

Wing measurements of my specimens.

1. From West Java (Wynkoops Bay and Pandeglang district); 66, 67, 67, 68, 69, 71, 73·5 mm. *M. s. sepiaria*

¹ I have seen an undoubted example of *L. f. culminata* from Patani, however, showing that this race and *neglecta* may (occasionally) inosculate as well as intergrade.

2. From East Java (Bali Strait to Idjen Massif) ; 67, 68, 68, 74 mm. *M. s. minor*

3. From Mid Java (Karongbolang on the S. Coast, 40 miles E. of Tjilitjap) ; 72, 68, 76 mm. These are truly typical of neither form : the first might be placed with *s. sepiaria*, the others with *s. minor*.

Meyer gives wings of 61–64 mm. for *minor* ; 70–72 mm. for *sepiaria* : but there is no real difference in size as Buttikofer points out. See also Finsch (Notes Leyd. Mus. XXII, p. 220) who finds the wings to vary indiscriminately from 65 to 74 mm. as I do.

Except on the heads the colour differences given by Meyer are not visible in the freshly collected series.

CHIBIA HOTTENTOTTA.

1 ♂ ad., 1 ♂ imm., 2 ♀ imm., 1 ♀ juv. Badjoelmati, 30 miles north of Banjoewangi, East Java, 31st January—7th February, 1920.

Total length (♂♂, ♀♀) 308, 300, 285, 288. Tail, 144, 137, 128, 125. Wing, 155, 153, 150, 143. Tarsus, 25, 25.5, 25, 24. Bill from gape, 38, 38, 37, 35 ; from nostril, 25, 23, 22.5, 22 mm.

“Iris, adult male yellowish white, immature birds dark. Bill black, tip and gape whitish in immature birds. Feet black.”

The immature specimens lack the spangles on the head and breast and have no frontal hairs, shoulder plumes or curled tail feathers.

The colour and plumage characters of this bird are exactly those of *C. hottentotta* (which occurs on the Continent as far south as South Tenasserim and Cochin-China only ; for this species is another instance of that interesting anomaly in distribution in which a number of species common in Indo-China are absent in the Malay Peninsula, but appear again in Java and sometimes in Borneo and Sumatra) and apparently of *leucops*, Wallace, of Celebes and *pectoralis* Wallace, of the Xulla Islands. In the shape of the bill it agrees with the two last, the bill being higher, less tapering and more keeled than in continental birds : it is in fact the bill of the so-called *Dicruopsis sumatranus* (Wardl. Rams.) somewhat elongated ; and larger of course, to agree with the size of the bird. Except for larger size and perhaps a proportionately slightly heavier bill, it scarcely differs from *borneensis* Sharpe.

The iris is yellowish white, thus closely agreeing with *leucops*.

I cannot definitely determine the form for lack of material and literature : from the Thousand Islands at the N.W. end of Java *termeuleni* has been described by Finsch and from Kangean Id., at the N.E. end, *jentinki*, by Vorderman.

The specimens constitute a new record for Java. I have no hesitation in including them in *Chibia* for there seems to me no reason why those birds which have been placed in *Dicruopsis* should be excluded from the earlier genus : all link up too closely to be separated. Sharpe long ago expressed the same opinion with regard to the genus of these birds (P.Z.S. 1879, p. 247).

Since Mr. Stuart Baker published the results of his study of continental material of the species *Chibia hottentotta* (Nov. Zool. XXVI, 1919, p. 44), I have been able to examine, side by side with the specimens in the F.M.S. Museums, the collection of these birds belonging to the Indian Museum.

On the whole this material confirms Baker's conclusions (except that being smaller the series shows a smaller range in dimensions and presents one or two anomalies¹), viz., that in the North of India from the Northwest to the Eastern Himalayas and Assam—and perhaps North Burma and the Shan States—the birds are, on the whole, larger ; whereas in Bombay, Central India, Bengal, South Burma and Siam to Cochin-China and Annam they average not so large.

But investigation of material should go hand in hand with investigation of literature and Baker has omitted a study of the latter. It is certainly a less interesting pursuit.

It is open to anyone to select a type locality for a form which has been described without one and often, of course, it is largely a matter of chance whether the choice made is anywhere near correct : but the selection should at least have the *appearance* of probability. As the type locality for a bird known to Brisson and Linneus Sikkim seems so improbable that the fixation may be disregarded.

But in this case there is another reason for rejecting it. As a type-locality the region including Sikkim is preoccupied. Baker considers birds from Nepal, Sikkim and Bhutan to be alike and the Nepal bird has been described by Gould as *Edolius chrishna* (P.Z.S. 1836, p. 5) and by Hodgson as *Edolius casia* (Indian Review, 1, 1836-7, p. 324). Until the longer-winged, longer-billed northern birds are separated into races by some reviser the name they must all bear is *Chibia hottentotta chrishna* (Gould).

Other places which are perhaps debarred from selection as type localities of the original form are Borabhum and Dholbhum, Chota Nagpur, (*Criniger splendens* Tickell, Journ. Asiat. Soc. Bengal II, 1833, p. 574) ; and Bengal (Calcutta), the locality given by Latham for his Crishna Crow (Gen. Hist. Birds, III, 1822, p. 51, pl. XI) which is the same as *Edolius barbatus* Gray (Zool. Misc., 1831, p. 34).

¹ Specimen from Upper Burma, wing 166, bill from nostril 26 ; from Loisampa, Shan States, wing 180, bill from nostril, 26 (it is possible that more material may show these to be the Chinese form) : from South of Irawadi, wing 179, bill 29 mm,

For the type locality of *Chibia h. hottentotta* I select Siam. As in the case of *Cuculus (Dissemurus) paradiseus*, Linneus based the species on Brisson who recorded Siam as the native country of the latter bird. In Journ. Nat. Hist. Soc. Siam, III, 1919, p. 453, I restricted the type locality to the region between Ayuthia and the head of the Gulf and now select the same district for *C. h. hottentotta*. Mr. W. J. F. Williamson has obtained specimens from near Bangkok (t.c.s. p. 45).

As thus localised *C. h. hottentotta* comes nearest, of recognised races, to *C. h. brevirostris* of China (type locality Chusan), but has a rather longer bill, but somewhat shorter wing.

It seems that there are (1) in the north a larger bird with (a) a large bill in the Himalayas (*chrishna* Gould) and (b) a small bill in China (*brevirostris* Cabanis) : (ii) in the south a rather smaller bird with a bill of intermediate size (*hottentotta* Linn.). Whether the bird of Bombay and Central India in distinct requires, as Mr. Baker says, a larger series than is available to show. I fancy it is not : the few measurements given are well within the range of a series from Burma and Siam.

Thus we have on the Continent at present :—

<i>C. h. hottentotta</i>	S. Indo-China and Peninsula India.
<i>C. h. chrishna</i>	Himalayas, etc.
<i>C. h. brevirostris</i>	Eastern China.

MALAYSIAN CROWS.

CORVUS CORONOIDES.

To a number of the "Verhandlungen der Ornithologischen Gesellschaft in Bayern," received only recently, Dr. Erwin Stresemann contributes a long and interesting paper on the forms of the group¹ *Corvus coronoides* Vig. & Horsf. (Band XII, Heft 4, May 1916, pp. 277-304).

The following is a rough translation of the parts with which this note deals :—

(p. 284). *Corvus coronoides andamanensis* Beavan.

Corvus andamanensis Beavan ex Tytler MS. [Ibis 1866, p. 420—Andamans : nomen nudum !] Ibis 1867, p. 328—Andamans.

Like *C. c. intermedius*, but on the average with shorter wings and a longer, higher bill. Base of feathers in adults more or less pronounced white, never grey.

Length of wings : Assam : 328, 337. Upper Burma : 294-343 (6 examples)². Tenasserim : 279-343. (Average of 12 examples : 312.8). Penang : 331. Andamans : 292-341 (Average of 10 examples : 313.1).

¹ Or species, as I should probably say. C.B.K.

² I have omitted a number of individual measurements throughout. C.B.K.

Length of bill : Assam 61, 62. Burma : 57, 58. Tenasserim : 58.5, Penang, 60. Andamans : 54-62.5 (Average of 13 examples : 58.5). Average of 20 examples : 58.9.

Height of bill : Minimum 20.5, maximum 24.1. Average of 22 examples : 22.2.

Distribution : Assam and Burma, southwards to Tenasserim and Penang¹; Andamans. The range of the form probably extends to the northern part of the Malay Peninsula also though no examples seem as yet available. All crows which I have seen in Museums from the Malay Peninsula and those which I shot in Perak myself were *Corvus enca compiler* Richmond. It is, therefore, not clear how one should regard the "*Corvus macrorhynchus*" which Robinson and Kloss record in Ibis 1911, p. 71, as "very abundant in Trang and also in Langkawi and Terutau" especially as these investigators add the astonishing remark "From Perak southwards to Johor the Slender-billed crow, *Corvus enca* Horsf., occurs, but is very rare, only three or four specimens having been obtained" (!). A transfer of names between the two species appears to me as not improbable.

(p. 287). *Corvus coronoides macrorhynchus* Wagl.

sp. 3 (1827—Java. Type in the Munich Museum).²

Corvus macrorhynchus Wagler ex Temminck MS., Syst. Av. *Corvus*

Corvus timorensis Bonaparte, Compt. Rend. 37, p. 829 (1853—Timor).

Like *C. c. andamanensis* and *intermedius*, but with bill of different shape : bill at the base about as high as over the nostrils. Base of the feathers in adults always white, in young birds brownish white. Iris brown.

Examples from the Timor group do not appear to completely agree with birds from the typical locality : but differ in having a shorter bill on the average, clearer white bases to the feathers and a rather stronger gloss below ; but the Javanese material I have examined³ is insufficient for me to decide the question.

Length of wings :

Java : 335, 350. Bali : 356. Kangean : 320, 365. Lombok : 353. Lomblen : 328, 348. Alor : 340. Wetar : 320-347 (6 examples). Timor : 314-335 (4 examples) Savu : 324. Sumba : 323.

Average of 26 examples : 336.4.

¹ The British Museum possesses two examples from Penang, Coll. A. R. Wallace and Dr. Cantor. E. S.

² Cf. Parrot, Zool. Jahrb., Abt. Syst. etc., 23, 1906, p. 272.

³ One example only. C.B.K.

Length of bill :

Java : 62, 69. Bali : 61. Kangean : 67. Lombok 61, 67.5. Flores : 62, 62.5, 64. Lombok : 61, 64.5. Alor : 62.5. Wetar : 59-65.5 (5 examples). Timor : 57.5, 58.5. Savu : 57.5. Sumba 58.

Average of 21 examples : 62.2.

Height of bill : minimum 20.1, maximum 24. Average of 21 examples : 22.3.

Distribution : Chain of islands from Java to Timor. Sumatra¹ ? Borneo² ?

* * * * *

Summarising the measurements given by Stresemann we have :—

Wing length :—

<i>andamanensis</i>	min. 279 ;	max. 343 ;	average 313 mm.
<i>macrorhynchus</i>	„ 314 ;	„ 365 ;	„ 336.4 „

Bill from gape :—

<i>andamanensis</i>	„ 54 ;	„ 62.5 ;	„ 58.9 „
<i>macrorhynchus</i>	„ 57.5 ;	„ 69 ;	„ 62.2 „

Bill height :—

<i>andamanensis</i>	„ 20.5 ;	„ 24.1 ;	„ 22.2 „
<i>macrorhynchus</i>	„ 20.1 ;	„ 24 ;	„ 22.3 „

The subspecies *macrorhynchus* is shown to have both a longer wing and a longer bill than *andamanensis*. The heights of the bills provide no differential dimensions ; but as regards shape Dr. Stresemann states that the culmen of *andamanensis* has its highest point above the nostril [*i.e.*, the profile is arched proximally] ; that of *macrorhynchus* is no higher above the nostril than at the base [*i.e.*, the profile is straight proximally].

Dr. Stresemann goes on to say (pp. 295-6) :—“ It is very surprising to find that there is a broad space between the two areas of distribution of the closely allied forms *andamanensis* and *macrorhynchus* : this is—strangely enough—occupied by a crow of another species, *Corvus enca compiler* ! In all parts of the latter's range, the southern half of the Malay Peninsula, Sumatra, Nias, Simalur, Borneo—so far as reliable reports go³ there is no representative of the *coronoides* species as we should expect ; at least in the southern half of the Malay Peninsula and in Sumatra which are parts of the old land bridge from India to Java. This is a case of allied, but

¹ Cf. Stone, Proc. Acad. Nat. Sci. Philadelphia, 1902, p. 690 : perhaps an error for *Corvus enca compiler* ! E. S.

² Fide Finsch, Notes Leyden Mus. XXII, p. 245. E. S.

³ Finsch indeed records *Corvus macrorhynchus* from Borneo, but probably means *compiler*. E. S.

heterogeneous species excluding each other geographically. In spite of the broad zone of separation *andamanensis* and *macrorhynchus* have remained very similar—so similar that the majority of modern ornithologists declare them to be identical.”

Dr. Stresemann could be accused of manipulating literature to fit a theory. In stating that no examples of *coronoides* seen available from the northern part of the Malay Peninsula he ignores our record of specimens from Trang, etc., where it was very abundant. In stating that it does not occur in the southern half of the Peninsula he ignores our next remark. “In the southern half of the Peninsula it is scarcer being only seen in numbers on the coast in the vicinity of fishing villages.” This last does away with his “broken land bridge” theory !

And when he wrote “From Perak to Johor the Slender-billed Crow, *Corvus enca* occurs, but is rare, etc.” and suggests (as I understand), that we have transferred the names of two species he stultifies himself—for if he believes that our *enca* of the Southern Malay Peninsula is *coronoides* he himself builds a bridge which he later demolishes.

There is no break in distribution—as far as the Peninsula is concerned.

Why is our opinion astonishing that *Corvus enca* is rare in the Malay States ? It is based on the experience of good many years : rather there is ground for astonishment that in probably little more than as many days in the country Dr. Stresemann found it, by inference, common.

As to Borneo and Sumatra Dr. Stresemann makes the same suggestion regarding the birds determined by Finsch and Stone as he does about our identification. Personally I have only seen examples of *C. enca* from these two islands, but it seems to me that, for the present, negative evidence is little better than no evidence.

The conclusion arrived at by Dr. Stresemann’s methods is that only one form of *C. coronoides*, viz., *andamanensis*, occurs in the Malay Peninsula, and that the species (apart from its occurrence at Penang), may extend from Burma to the northern part of the Peninsula only. Also that *Corvus enca compiler* is the common form.

I will now proceed to give some account of the Malaysian specimens of Crows at present in the F.M.S. Museums and, as no instructions have ever been given to our collectors to discriminate between the two species when procuring examples, it may be taken that the numbers secured fairly represent the rarity or commonness of the two birds. They show that as far as our experience goes we can repeat our former statement that *coronoides* is the commoner bird and in some form occurs throughout the Malay Peninsula.

Malay Peninsula :	Wing.	Bill from gape.	Bill height.	Sex.
<i>Indo-Chinese Specimens :—</i>				
Kraburi, Pakchan Estuary ..	326	67	24	♂
" " ..	325	66	23	♂
" " ..	313	64	22	♂
" " ..	302	63	21	♂
Ghirbi ..	320	64	21	♂
Koh Samui, Bandon ..	352	64	24.5	♂
Trang ..	310	59.5	22	♂
Telibon Id., Trang ..	333	67	25	♂
<i>Malayan Specimens :—</i>				
Terutau Id. ..	340	63	24.5	♂
Langkawi Id. ..	340	67	24.5	♂
" " ..	307	63	23.5	♂ vixad.
Temangoh, Upper Perak ..	324	63	23.5	♂
" " ..	322	64	24	♂
Taiping, Perak ..	344	66	22	♂
" " ..	325	60	21	♂
" " ..	350	66	24	♂
" " ..	305	60	22.5	♂
Bukit Gantang, Perak ..	306	61.5	22.5	♂
Trengganu ..	321	63	24	♂
" " ..	327	58	23	♂
Pulau Jarak, Straits of Malacca..	340	59	23	♂
Kuala Selangor ..	285	59	22	♂ subad?
" " ..	292	60	22	♂ do
" " ..	313	60	22	♂
Batu, Selangor ..	311	64	22.5	♂
" " ..	328	65.5	24.5	♂
<i>Java :—</i>				
Buitenzorg ..	340	63	23	♂
" " ..	308	57	23.5	♂
" " ..	323	58	23	♂

Twenty-six examples of *coronoides* against six of *enca* (vide postea) from the same area !

The birds of the Malay Peninsula have both the larger wing and longer bill ranges of *macrorhynchus* and must, I think, be placed under that name, for as regards the forms of the bill the differences stated by Dr. Stresemann do not seem to hold : I find both shapes in the Malayan series and of the three Javan birds one has the bill higher at the nostrils than at the base, while in the other two, the height at both places is the same.

My conclusions are therefore that a form of the species *Corvus coronoides* occurs throughout the whole of the Malay Peninsula where it is much commoner than the species *Corvus enca* ; and that south of Tenasserim (say Lat. 11° N.) it is *Corvus coronoides macrorhynchus* Wagl.

CORVUS ENCA.

Six specimens have been obtained during the same period and in the same area as the 26 examples of *C. coronoides* recorded above : the apparant occurrence is therefore, only one to four. The details are :—

		Wing.	Bill from gape.	Bill height.
Malay Peninsula :				
Taiping, Perak	..	316	65	22.3
"	..	310	62.5	20
"	..	303	60	20
"	..	304	61.5	20 vix. ad.
Bentong, Pahang	..	324	62	22.7
Ulu Langat, Selangor	..	307	61.5	22.5

Specimens from Borneo and Sumatra, (the latter submitted by Mr. E. Jacobson), measure :—

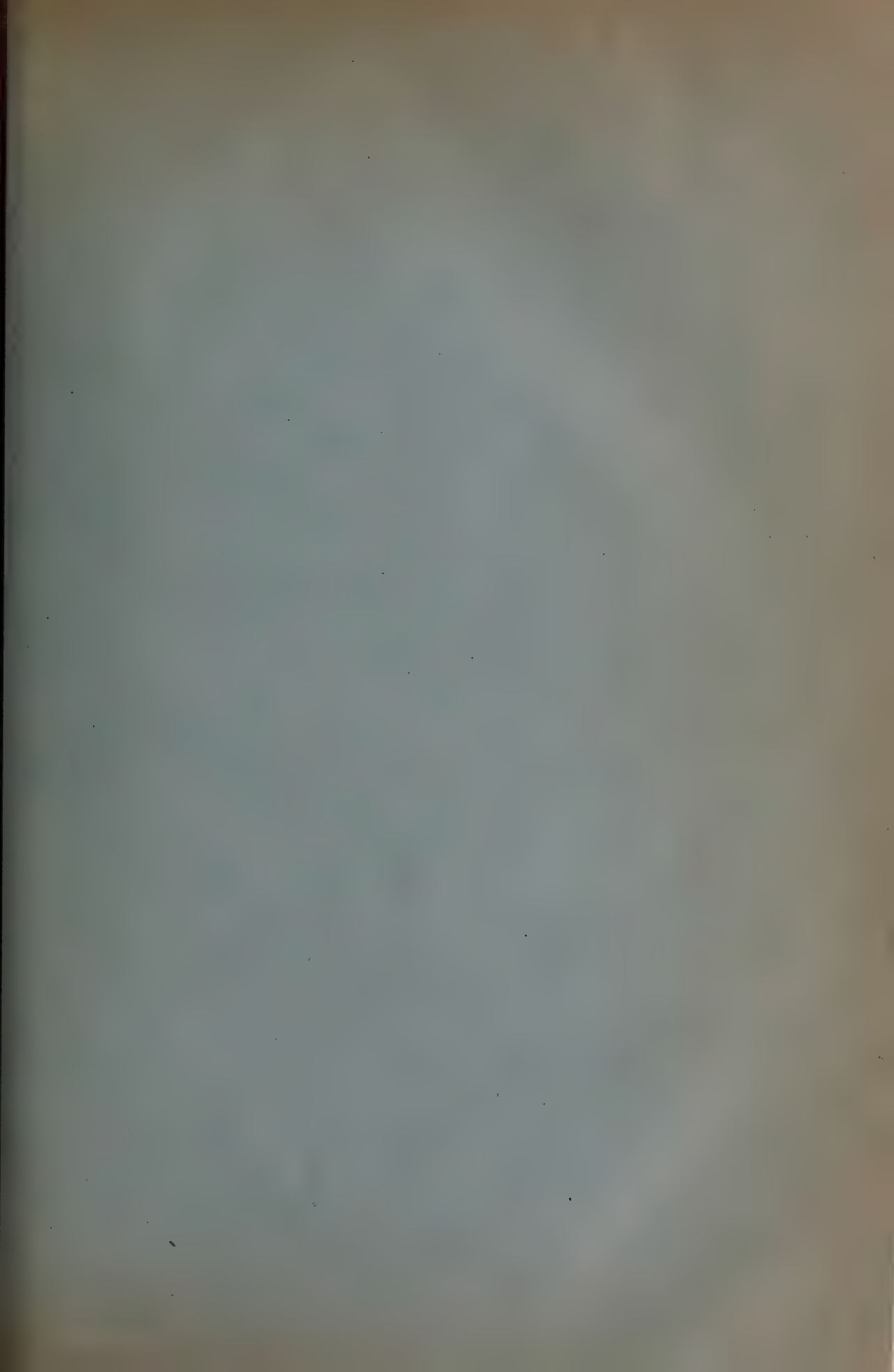
Locality.		Wing.	Bill from gape.	Bill height.
Borneo :				
Balangian, Sarawak	..	315	61	22
Samarahan "	..	308	61	23
Sumatra :				
Padang Highlands	..	320	61	21.5
"	..	300	61	22
"	..	298	63.5	22
"	..	317	65	21.5
"	..	322	64.5	23
"	..	305	60.5	21.5
"	..	309	61.5	22
"	..	314	63.5	20.5
"	..	305	60	21.5

All these are alike and must all be known as *Corvus enca compiler* Richmond (Proc. U. S. Nat. Mus. XXVI, 1903, p. 518. Type locality : Simalur Id., W. Sumatra).

Corvus enca enca (Horsf.) of Java is smaller and the bill is in some respects more like that of *C. c. macrorhynchus* than its own subspecies *compiler* : viewed laterally it is less wedge-shaped, i.e. the profile does not begin to taper so quickly.

Four adult specimens obtained by me in 1920 measure :—

	Wing.	Bill from gape.	Bill height.
Java :			
	282	55	19
	280	54	19
	273	54	16.5
	272	56	17



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XVI. BIRDS FROM THE ONE FATHOM BANK
LIGHTHOUSE, STRAITS OF MALACCA,
November, 1918 and November and December, 1919,
by

H. C. ROBINSON AND C. BODEN KLOSS.

The One Fathom Bank Lighthouse is an erection on a submerged bank in the middle of the Straits of Malacca about fifteen miles distant from Pulau Pintu Gedong, the nearest point of the Selangor Coast and about 26 miles from the Aroa Islands towards the Sumatran coast, whence a collection has already been reported on (*Journ. Fed. Malay States Mus.* ii, pp 8-14 (1906). This collection was made during November and is very similar in character.

The present list adds two birds to the Fauna of the Malay Peninsula, viz:—

Chelidon dasypus (Bp.)

Oceanodroma monorhis (Swinh.)

while several species only rarely met with on the mainland were found in abundance.

With very few exceptions all the specimens were either killed against the light or captured while fluttering around it. Species which were obtained on the Aroa Islands are marked with an asterisk.

1. *Treron nipalensis*, Hodgs. 1 ♂, 2 ♀
- *2. *Ptilinopus jambu* (Gm.). 6 ♂, 5 ♀
3. *Rallina fasciata* (Raffles). 6 ♂, 11 ♀
4. *Rallina superciliaris* (Eyton). 1 ♂, 3 ♀
- *5. *Amaurornis phoenicura chinensis* (Bodd.). 1 ♂, 1 ♀
- *6. *Sterna aenetheta*, Scop. 1 ♂, 2 ♀
7. *Sterna fluviatilis tibetana*, Saunders. 1 ♂
8. *Sterna* (?) *sinensis*, Gm. 2 ♀

The identification of these small terns in immature and winter plumage is a somewhat uncertain matter.

9. *Oceanodroma monorhis* (Swinh.). 1 ♂
10. *Terekia cinerea* (Guldenst). 1 ♂
11. *Limonites subminuita* (Middendorf). 1 ♀
12. *Gallinago sthenura* (Kuhl). 1 ♂
13. *Butorides javanica javanica* (Horsf.). 1 ♂

- *14. *Dupetor flavicollis* (Lath.). 1 ♂, 4 ♀
- 15. *Ardetta sinensis* (Gm.). 1 ♂, 1 ♀
- *16. *Sula sula* (Linn.). 1 ♂
- *17. *Accipiter virgatus gularis*, Temm. & Schleg. 1 ♀
- *18. *Otus scops malayana* (Hay). 1 ♀
More rufous than the majority of specimens.
- *19. *Ninox scutulata scutulata* (Raffles). 1 ♀
Wing 211 mm.
- *20. *Halcyon coromandus coromandus* (Lath.). 3 ♂, 3 ♀
- *21. *Halcyon pileatus* (Bodd.). 1 ♂
- *22. *Ceyx tridactyla* (Pall.). 10 ♂, 2 ♀
- 23. *Eurystomus orientalis orientalis* (Linn.). 1 ♀
- *24. *Caprimulgus indicus jotaka*, Temm. & Schleg. 1 ♂
- 25. *Collocalia innominata*, Hume. 2 ♂, 1 ♀
- *26. *Coccyzus coromandus* (Linn.). 1 ♀
- *27. *Surniculus lugubris dicruroides*, Hodgs. 1 ♂, 7 ♀
Decidedly this form with the wing in all cases over 135 mm.
- *28. *Hierococcyx fugax nasicolor* (Hodgs.). 3 ♂, 1 ♀
- *29. *Cuculus micropterus*, Gould. 1 ♂
- *30. *Pitta cyanoptera*, Temm. 11 ♂, 10 ♀
- *31. *Pitta cucullata*, Hartl. 1 ♂, 10 ♀
- 32. *Hemichelidon sibirica fuliginosa*, Hodgs. 7 ♂, 2 ♀
- *34. *Alseonax latirostris* (Raffles). 3 ♂
- 35. *Zanthopygia xanthopygia* (Hay). 2 ♀
- 36. *Cyanoptila cyanomelana cumatilis*, Thayer and Bangs. 1 ♂
- 37. *Poliomyias mugimaki* (Temm.). 5 ♂, 1 ♀
- 38. *Terpsiphone paradisi incii* (Gould). 1 ♀
- 39. *Terpsiphone atrocaudata* (Eyton). 1 ♂, 1 ♀
- 40. *Rhinomyias tardus*, Robinson & Kloss. 2 ♂, 1 ♀
Very doubtfully distinct from *Rhinomyias nicobarica*, Richmond.
- 41. *Pericrocotus cinereus*, Lafr. 3 ♂, 2 ♀
- 42. *Cichloselys sibirica davisoni*, Hume. 12 ♂, 12 ♀
- *43. *Turdus obscurus* (Gm.). 1 ♂, 1 ♀

- *44. *Larvivora cyanea* (Pall.). 6 ♀
- *45. *Locustellata lanceolata* (Temm.). 5 ♂, 9 ♀
- 46. *Locustella certhiola* (Pall.). 1 ♂, 1 ♀
- 47. *Acrocephalus orientalis*, Temm. & Schleg. 3 ♀
- 48. *Phylloscopus borealis borealis* (Blas.). 7 ♂, 4 ♀
- 49. *Lanius cristatus*, Linn. 3 ♂, 1 ♀
- 50. *Lanius tigrinus*, Drap. 1 ♂ imm.
- 51. *Chelidon dasypus* (Bp.). 1 ♀

The occurrence of this rare martin, which breeds in Japan and has been met with on migration in Borneo whence it was originally described, is rather surprising. The single specimen appears perfectly typical.

XVII. A LIST OF BIRDS COLLECTED ON PULAU RUMPIA, SEMBILAN ISLANDS,

In November and December, 1918

by

H. C. ROBINSON AND C. BODEN KLOSS.

The following list of birds collected by Mr. E. Seimund on Pulau Rumpia, one of the Sembilan Islands off the mouth of the Perak River, in November and December, 1918 is of interest as bearing on migration and migration routes in the Malayan region, regarding which we have as yet very little exact knowledge.

One bird, new to the Fauna of the Malay Peninsula, was obtained:

Oreocincla dauma (Lath.)

Pulau Rumpia is a rocky island rising to a height of about 600 feet and of very uneven surface. In extent it is perhaps 1,500 or 2,000 acres and is densely forested. There are two or three small bays with sandy beaches of no great extent. It is the largest of the Sembilan Group and is separated from the other islands and from the mainland by depths approximating to twenty-five fathoms.

Except during the migration season the bird population is small, being confined to a few nutmeg-pigeon, crows, sunbirds and an occasional kingfisher, excluding of course the usual shore and marine birds.

1. *Treron nipalensis*, Hodgs. 1 ♂

2. *Ptilinopus jambu* (Gm.). 2 ♂, 4 ♀

Of highly migratory habits and found fighting at night in many very diverse localities, such as Government House, Singapore, and the Semangko Pass, Selangor-Pahang boundary.

3. *Myristicivora bicolor* (Scop.). 5 ♂, 1 ♀

Common on all the islands more or less throughout the year but rarely if ever found away from the coastal mangrove belt on the mainland.

4. *Chalcophaps indica* (Linn.). 2 ♂

Probably resident on the island in small numbers throughout the year.

5. *Caloenas nicobarica* (Linn.). 1 ♂, 2 ♀

Possibly resident, though we have never found it in the summer months.

6. *Tringoides hypoleucus* (Linn.).

Found throughout the year.

7. *Rallina superciliaris* (Eyton). 1 ♂

This rail and its congener *R. fasciata* are both very wandering species.

8. *Demiegretta sacra* (Gm.). 1 ♀

9. *Gorsachius melanolophus* (Raffles). 1 ♂

10. *Dupetor flavicollis* (Lath.). 1 ♀

Both migratory birds of highly nocturnal habits.

11. *Astur soloensis* (Lath.). 1 ♂ imm.

A rare bird in the Malay Peninsula; most of our specimens have been obtained in the autumn or winter months and it is doubtful if it is a resident.

12. *Astur badius poliopsis* (Hume). 1 ♀ imm.

An immature female in process of change to the adult plumage.

Also a migratory bird in the south of the Peninsula, though not improbably resident in the northern parts.

13. *Accipiter virgatus gularis*, Temm. & Schleg. 3 ♂ imm, 10 ♀ imm.

Also a very common migrant to the Malay Peninsula, but keeping mainly to the coasts. Other than immature birds in the striped plumage are hardly ever met with.

14. *Eurystomus orientalis orientalis* (Linn.). 3 ♂, 1 ♀

15. *Eurystomus orientalis calonyx*, Sharpe. 1 ♀

With Stuart Baker we are beginning to have our doubts as to the separability of these forms.

16. *Alcedo atthis bengalensis*, Gm. 1 ♂

Resident.

17. *Ceyx tridactyla* (Pall.). 1 ♀

A visitor; but not a migrant in the true sense.

18. *Halcyon pileata* (Bodd.). 1 ♂

19. *Halcyon chloris humii*, Sharpe. 1 ♂ imm.

Casual visitors.

20. *Caprimulgus indica jotaka*, Temm. & Schleg. 1 ♂, 1 ♀

Common throughout the Peninsula in the winter months.

21. *Cuculus micropterus*, Gould. 1 ♀

22. *Hierococcyx fugax nasicolor* (Hodgs.). 2 ♀ imm.

Only met with in the Peninsula in winter.

23. *Eudynamis scolopacea malayana*, Cab. 5 ♂, 11 ♀

Probably partially resident but the numbers are much augmented in the winter months.

24. *Surniculus lugubris*, *subsp.* ? 2 ♂, 2 ♀

It is difficult to decide whether these cuckoos should be referred to *S. l. dicruraoides* Hodgs., the northern race or *S. l. brachyurus*, Stresemann, the southern form described from Pahang. In size they are intermediate, having a wing of from 131-136 mm.

25. *Pitta cyanoptera*, Temm. 1 ♀

Performs migrations of limited extent.

26. *Hemichelidon sibirica fuliginosa*, Hodgs. 2 ♂, 3 ♀

27. *Hemichelidon ferruginea*, Hodgs. 2 ♂

A bird of passage merely, on the coasts and at low elevations in the Malay Peninsula. Probably resident during the winter months in the higher mountains.

28. *Muscitrea grisola grisola* (Blyth). 1 ♀

Probably resident.

29. *Poliomyias mugimaki* (Temm.). 5 ♂, 15 ♀

Migratory.

30. *Terpsiphone incii* (Gould). 1 ♂

Migratory.

31. *Cyanoptila cyanomelana cumatilis*, Thayer and Bangs. 1 ♀

Cyanoptila cumatilis, Thayer & Bangs, Bull. Mus. Comp. Zool. Harvard, III, 1909, p. 131 (Hupeh, China).

Our specimens from the Malay Peninsula conform to the description of Thayer and Bangs. It is doubtful however if they represent other than a non-breeding plumage of the true *C. cyanomelana* (Temm.) from Japan and it has yet to be shown that *C. bella* (Hay) described from Hongkong does not apply to the second form, the throat being described as "dull blue black."

32. *Pericrocotus cinereus*, Lafr. 1 ♂
Migratory.

33. *Cichloselys sibirica davisoni*, Hume. 2 ♂ imm.,
3 ♀ imm.

These birds are all very immature, but the Malayan race is probably that described by Hume from Muleyit if *Geocichla inframarginata* from the Andamans, described by Blyth in 1860, is not the same form.

34. *Turdus obscurus* (Gm.). 6 ♂, 5 ♀

A bird of passage in the low country.

35. *Oreocincla dauma* (Lath.). 1 ♀

A single bird shot on the 29th November, 1918, agrees precisely with *Oreocincla dauma*, which has not been recorded from further south than Central Tenasserim. It is not *O. affinis* Richmond, from the mountains of Peninsular Siam, with which we have compared it, that species having fourteen and not twelve tail feathers. Wing, 142 mm.

36. *Locustella lanceolata* (Temm.). 3 ♂

Resident and common in the Malay Peninsula during the winter months.

37. *Phylloscopus borealis borealis* (Blas.). 3 ♂, 2 ♀

Common in the Malay Peninsula. All this series are the true *A. b. borealis* with the smaller first primary and not *A. b. xanthdryas*, with the larger first primary extending well beyond the coverts, which is occasionally met with.

38. *Phylloscopus inornatus inornatus* (Blyth). 1 ♂

Reguloides humei praemium, Mathews and Iredale Austral. Av. Record iii, p. 45, 1919.

This is the bird hitherto known as *Acanthopneuste superciliosus* (Gm.)*. The present example is the most southerly recorded; we have it also from Taiping.

* Cf. Ticehurst, Ibis, 1922, p. 147.

39. *Aplonis panayensis strigatus* (Horsf.). 1 ♀

Accidental on Pulau Rumpia.

40. *Motacilla boarula melanope*, Pall. 1 ♀

A few are generally to be met with on Pulau Rumpia in the winter months. From Pulau Lalang, distant two or three miles from P. Rumpia, we have a specimen of *M. flava simillima*, Hartert, shot on 15th October, 1911. This species is very rare in the Malay Peninsula.

41. *Cyrtostomus ornatus ornatus* (Less.). 2 ♂

Fairly common throughout the year. This is the bird hitherto known as *Arehnecthra pectoralis* (Horsf.).

XVIII. LIST OF BIRDS COLLECTED ON PULAU
JARAK, STRAITS OF MALACCA,

In November, 1919,

by

H. C. ROBINSON AND C. BODEN KLOSS.

For comparison with the birds collected on Pulau Rumpia a collection was also made on Pulau Jarak, Straits of Malacca, in November, 1919. Pulau Jarak is a small island, about three hundred acres in extent, rising steeply from the sea to a height of 600 feet. It is densely covered with vegetation and has no beaches and is entirely uninhabited.

Large numbers of a peculiar rat (*Rattus rattus jarak*, Bonhote) are found on it and a slightly differentiated form of a widely spread fruit bat (*Pteropus hypomelanus fretensis*, Kloss). As might be expected the birds obtained are not materially different from those on Pulau Rumpia from which island Pulau Jarak is distant about 34 miles almost due west, the maximum depth of the intervening sea being about 30 fathoms.

List.

1. *Myristicivora bicolor* (Scop.). 2 ♂
2. *Caloenas nicobarica* (Linn.). 1 ♂, 1 ♀
3. *Amaurornis phaeincura chinensis* (Bodd.). 1 ♂, 3 ♀
4. *Butorides javanica javanica* (Horsf.). 2 ♂, 1 ♀
5. *Dupetor flavicollis* (Lath.). 1 ♂, 2 ♀
6. *Demiegretta sacra* (Gm.). 1 ♀
7. *Gorsachius melanolophus* (Raffles). 2 ♂, 2 ♀

8. *Anous stolidus pileatus* (Bodd.). 1 ♂

The black noddy is extremely rare in the Straits of Malacca and this is only the second specimen on record.

9. *Sterna fluviatilis tibetana*, Saunders.

We are inclined to refer the terns of this type obtained in the Straits of Malacca in winter to this race of the Common tern and not to the Kamchatkan, *Sterna longipennis* Nordman, as has been done by many authors.

10. *Accipiter virgatus gularis*, Temm. & Schleg. 3 ♂, 6 ♀
All these specimens are immature.11. *Astur soloensis* (Horsf.). 1 ♂
A very nearly adult male.12. *Otus scops malayana* (Hay). 1 ♂
A moderately rufescent bird.13. *Ninox scutulata scutulata* (Raffles). 2 ♂, 4 ♀
All belonging to the migratory form with the wing over 210 mm.14. *Halcyon coromandus coromandus* (Lath.). 6 ♂, 3 ♀.15. *Halcyon pileatus* (Bodd.). 2 ♂16. *Caprimulgus indicus jotaka*, Temm. & Schleg. 1 ♀17. *Eudynamis scolopacea malayana*, Cab. 2 ♂18. *Cuculus micropterus*, Gould. 1 ♀19. *Pitta cyanoptera*, Temm. 1 ♂20. *Alseonax latirostris* (Raffles). 2 ♂21. *Hemichelidon ferruginea*, Hodgs. 1 ♂, 1 ♀22. *Cyanoptila cyanomelana cumatilis*, Thayer and Bangs. 1 ♂23. *Terpsiphone atrocaudata*, Eyton. 2 ♂ imm.
Terpsiphone princeps, auct.

Two immature specimens. The bird is very rare or only makes a very brief stay in the Malay Peninsula, whence we have only three other specimens.

24. *Monticola solitarius philippinensis* (Mull.). 1 ♀25. *Cichloselys sibirica davisoni* (Hume). 9 ♂, 5 ♀
Adults are very typical *C. s. davisoni*.26. *Larvivora cyanea* (Pall.). 3 ♂27. *Locustella lanceolata* (Temm.). 4 ♂, 2 ♀28. *Phylloscopus borealis borealis* (Blas.). 6 ♂, 2 ♀29. *Dicrurus annectens*, Hodgs. 7 ♂, 1 ♀
Quite typical.

XIX. THREE NEW ORIENTAL BIRDS.

By H. C. ROBINSON AND C. BODEN KLOSS.

Otus luciae siamensis, *subsp. nov.*

Heteroscops vulpes, Robinson, Journ. Fed. Malay States Mus. v, 1914, p. 91 (Bandon); Gyldenstolpe, Ibis, 1920, p. 752.

Otus luciae, Robinson & Kloss, Journ. Nat. Hist. Soc. Siam, V., 1922, p. 111.

A very rufous form of *Otus luciae* (Sharpe). The black markings on the crown, nape and tail much reduced and the spots on the back obsolete: wings and tail strongly washed with rufous, the outer webs of the wing feathers scarcely blackened, the pale wing bars much obscured. The undersurface paler and the spots and vermiculations obsolete. Differs similarly, but to a less degree, from *O. vulpes*, Grant, from Gunong Tahan, 5,000 feet, Pahang. We are not prepared to accept *vulpes* as different from the Kinabalu bird.

Type. Adult female from Kao Nong, Bandon, 3,500 feet, Peninsular Siam: collected on 23rd June, 1913.

A male from Kao Luong, 5,000 feet, in the same mountain range, differs only in having the black markings on the head a little more pronounced and in being a trifle darker beneath.

Compared with one example of *O. luciae* from N. Sarawak and seven from the Malay States (*O. vulpes*, Grant).

Cyornis anak, *sp. nov.*

Size as in *Cyornis magnirostris*, Blyth, but the bill markedly smaller: males with the breast a deeper rufous and the blackish-blue of the sides of the neck extending to restrict the rufous area of the throat to a small A shaped area falling considerably short of the mandible: upper parts deeper blue.

Females like those of *magnirostris* but the underparts paler; the abdomen more extensively white owing to lesser infuscation of the flanks, undertail-coverts white, the pale area of the throat restricted as in the males; the upper parts rather browner, less olivaceous.

Type. Adult male from Krongmun, Trang, Peninsular Siam: collected on 16th February, 1910. Specimens examined: the type, a male from Kao Luong, 2,000 feet, Nakawn Sri Tamarat, a female from Nongkok, Ghirbi and a female (? vixad.) from Chong, Trang; collected on 23rd March, 1922, 12th January, 1918 and 16th February, 1910.

Measurement: Wing ♂ 78*, 79, ♀ 77, 72: bill from gape ♂ 19*, 18 ♀ 17, 16.5 mm.

Compared with two males and two females of *C. magnirostris* and a large series of *C. caerulifrons* Baker—a much smaller bird. We cannot refer these examples to any known form and are very reluctantly impelled to give them a new name.

***Kittacincla malabarica interposita*, subsp. nov.**

Kittacincla macrurus macrurus, Robinson & Kloss, Ibis, 1919, p. 596.

Differs from *K. m. malabarica* (Scop.) of India and Burma (type locality Malabar) by its darker female and from *K. m. tricolor* (Vieill.) of the southern half of the Malay Peninsula, Sumatra and West Java (type locality) in having the feathers of the thighs in both sexes white, hardly tinged with rusty. From this new race *K. malabarica macrourus* (Gm.) of Pulau Condore, off Cochin-China, differs in being paler on the breast in males and having less black on the outer tail-feathers.

Range. From South Annam and Cochin-China to Tenasserim and down the Malay Peninsula to about Trang as far as ascertained.

Type. Adult male from Daban, South Annam: collected on 14th March, 1918, by Boden Kloss. Wing 94 mm.

Many specimens examined from the range indicated.

* Type.

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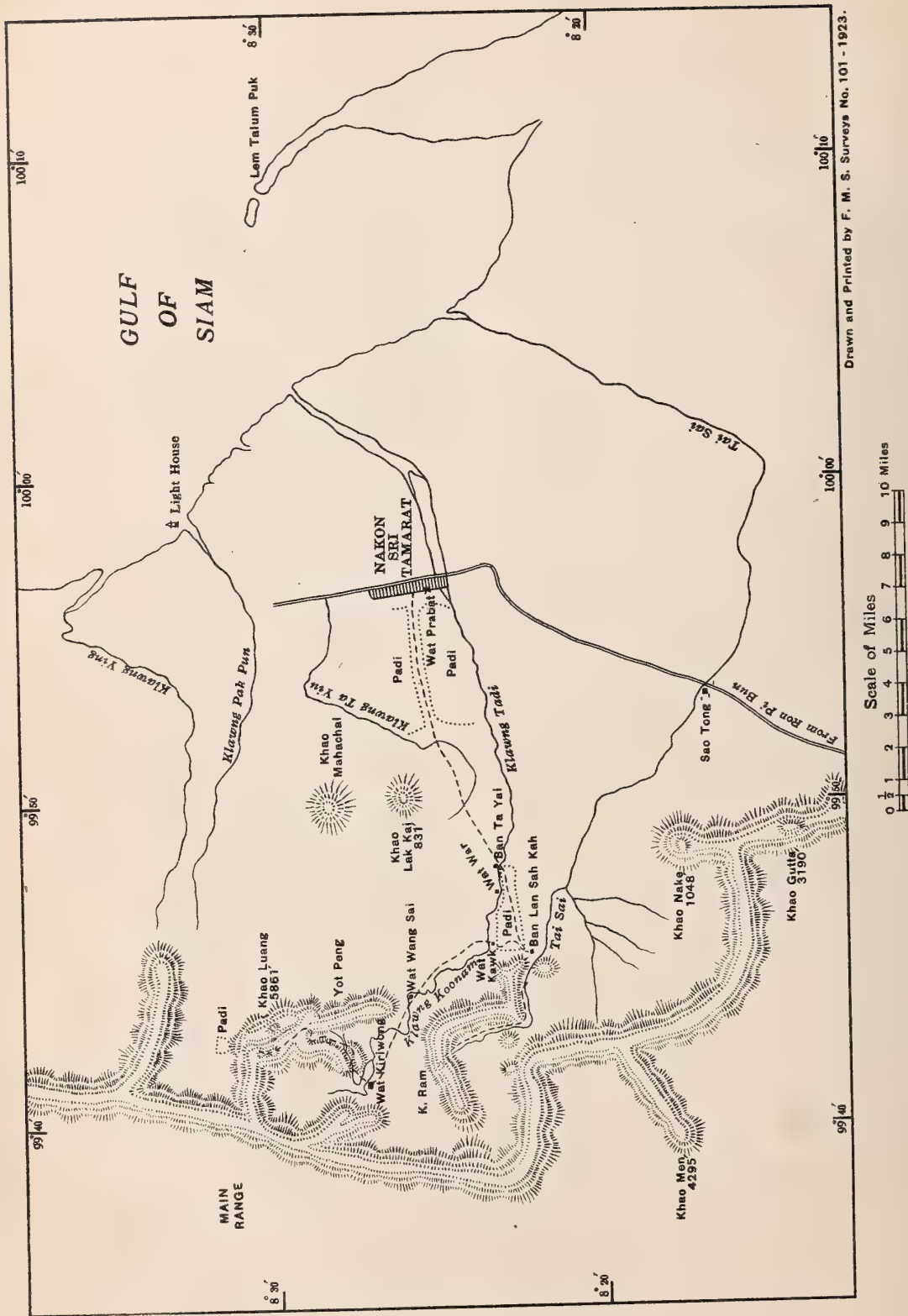
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IV. ELEVEN NEW ORIENTAL BIRDS.

By HERBERT C. ROBINSON AND C. BODEN KLOSS.

Treron bisincta javana subsp. nov.

Like *T. b. domvillii* (Swinhoe) with a small grey nuchal patch, but smaller; wings 150–158 mm. The former character separates it from *T. b. praetermissa* Robinson and Kloss¹, and *T. b. bisincta* (Jerdon).

Type. Adult male from Badjoelmati, north of Banjoewangi, East Java, collected on 2nd February, 1920, by C. Boden Kloss, No. 5902. Wing 150 mm. Three other males obtained from the same locality. Wings 150, 150, 158.

With the Javanese birds we associate birds obtained in S. E. and E. Siam, of small size (wings 146–149) and small nuchal patches (cf. Robinson, *Ibis*, 1915, p. 723; Kloss, *Ibis*, 1918, p. 82).

Dryobates analis montis subsp. nov.

Like the typical form *D. a. analis* Bp. (syn. *brevipennis* Hesse) but more richly coloured below; chin to vent more ochreous, under tail coverts deeper pink.

Type. Adult male obtained at Tjibodas, West Java, 4–6,000 ft. on 2nd February, 1916, by H. C. Robinson. No. 2599.

Specimens examined. Five males and eight females from Tjibodas and Mt. Karang, W. Java, compared with a large series from other parts of Java.

So far as is known at present this race inhabits the hill country of West Java only.

Three subspecies appear to be recognisable as follows:—

A. Under parts darker

Wings 91–98 mm.; black spots on breast less numerous (Mountains of West Java) *D. a. montis* R. & K.

B. Under parts paler

a. Wings 91–100 mm.; black spots on breast less numerous (Remaining parts of Java; Bali)
D. a. analis Bp.

b. Wings 93–104 mm. black spots on breast more numerous (Pegu, Karenne, Tenasserim and Siam south to lat. 12, Cochín-China, S. Annam)
D. a. longipennis Hesse.

¹ Journ. Fed. Malay States Mus., X, 1921, p. 203 (S. E. Siam: the Malay Peninsula to Assam and China).

Calyptomena viridis continentis subsp. nov.

Like *C. v. viridis* Raffles, of Sumatra (type locality restricted to Benkoolen District) but ranging larger : wing attaining a length of 113 mm.

Our Sumatran birds, of which we have only four examples, have wings 93–97 ; Bornean birds, wings 94–103 (25 ex.), and a larger Sumatran series would probably show nearly as high a maximum. Malay States birds have wings 97–107 (27 ex.) ; Peninsular Siam, 99–112 (13 ex.) and Tenasserim birds, wings 105–113 mm. (fide Hume, *Stray Feathers*, VI, 1878, pp. 86, 499 : Amherst to Malewoon).

The island birds combined have extremes of 93–103, the continental 97–113 mm.

The Malay States birds are intermediate but since they range larger than any of the Sumatra-Borneo series it seems for the present advisable to place them all with the northern form.

Types. Adult male and female from Tasan, Chum-porn, Peninsular Siam, collected on 14 and 15 March 1919, by H. C. Robinson and C. Boden Kloss. Nos. 4568, 4598, F.M.S.

Measurements. Total length, ♂ 177, ♀ 197 ; wing ♂ 106, ♀ 112 ; tail, ♂ 50, ♀ 65 ; tarsus, ♂ 22, ♀ 23 ; bill from gape, ♂ 24 mm.

Nitidula hodgsoni sondaica subsp. nov.

Differs from the typical form from Nepal in more cœrulean, less indigo, upper side : head not appreciably brighter than mantle and back : ear coverts washed with blue, not uniform black. Size similar.

Type. Adult male from Korinchi Peak, W. Sumatra, 7,300 ft., collected on 10 May, 1914, by H. C. Robinson and C. Boden Kloss. No. 1480, F.M.S. Wing 48 mm.

Specimens examined from Sumatra (Korinchi Peak), Malay Peninsula (Semangko Pass), Borneo (Kinabalu and Dulit).

Pomatorhinus montanus occidentalis subsp. nov.

Like *P. m. borneensis* but ranging larger and with a larger bill. Tail more washed with russet.

Eleven Bornean birds from Sarawak have wings 78–87 mm. ; bills, tip to nostril, 14·7–16·4 mm.

Twenty Malayan birds (Perak to Negri Sembilan) have wings 81–96 mm. ; bills, tip to nostril, 16·0–18·5 mm.

Four West Sumatran examples have wings 86–88 mm. and bills 17·9–18 mm. : these we place with the Malayan form.

Type. Adult male collected at Ginting Bidai, Selangor, 2,300 ft., 1st November, 1907. No. 2107/09. Wing 91 mm., bill from nostril 18.8 mm.

Key to the races of *P. montanus*.

A. Superciliary stripe absent or obsolete in front of the eye ; colour above dullest ; tail longer and much suffused with russet (E. Java ; Bali). *P. m. otterlanderi* Robinson

B. Superciliary stripe present in front of the eye ; colour brighter

a. Colour duller ; tail longer and much suffused with russet (W. Java) *P. m. montanus* Horsf.

b. Colour brighter, tail shorter

a¹. Larger, tail markedly washed with olivaceous (Malay Peninsula and Sumatra)
P. m. occidentalis R. & K.

b¹. Smaller ; tail scarcely washed with olivaceous (Borneo) *P. m. borneensis* Cab.

***Chloropsis hardwickii malayana* subsp. nov.**

Like *C. h. hardwickii* Jardine and Selby, of Nepal, but smaller ; wings 84–89 mm. (12 adults) whereas Indian and Burmese birds measure 93–99 mm. in length of wing.

Type. Adult male from Gunong Ijau, Perak, Malay States, 4,500 ft., collected on 29th July, 1909. Wing 88 mm. Specimens examined from the type locality south to Gunong Mengkuang Lebar, Selangor.

From North Siam Gyldenstolpe records a possibly immature male with a wing of 88 mm., probably of this race.

The species is recorded by Oustalet from Tonkin, North Laos and North Annam (Nouv. Arch. du Mus. (4) V, 1903, p. 71) : specimens from these areas require critical examination.

***Brachypodius atriceps major* subsp. nov.**

Like *B. a. atriceps* (Temminck), type locality here designated as Java, but larger. Wings more than 80 mm.

Type locality, North Cachar, Assam, where (fide Baker, Journ. Bombay Nat. Hist. Soc. VIII, 1893, p. 4) wing length varies between 82–85 mm.

Known range, British India north of the Isthmus of Kra, and probably Siam. Both forms occur at the Pakchan whence we have a series with wings from 78 to 86 mm. ; but three examples from Koh Lak, S. W. Siam, have wings of 79 mm. and it is therefore probable that the true range of *B. a. major* does not extend southwards much beyond Tavoy.

B. a. atriceps has wings ranging from 75 to 81 mm. and occurs in the Malay Peninsula, Sumatra, Java, Borneo ; and also the Philippines (fide McGregor, Man. Philippine Birds, 1909, p. 513 : wings 75-77 mm).

The wings of six topotypes measure 75-79 mm. ; of thirteen Sumatran specimens 74-80 mm. ; of twelve Bornean 74-78 mm. ; of twenty-six from the Malay States 75-81 mm. ; of eighteen from Peninsular Siam, south of Lat. 9° N., 77-81 mm.

With regard to the specific name Oberholser has pointed out (Proc. U. S. Nat. Mus., 52, 1917, p. 193) that *Lanius melanocephalos* Gmelin, Syst. Nat. I, 1788, p. 309, is preoccupied by *Lanius melanocephalus* Gm. t. c. p. 301, and that the next available name is *Turdus atriceps* Temminck, Pl. Col. No. 147, 1822 : Sumatra and Java. Malayan birds have been named *Ixos metallicus* by Eyton and Bornean *Brachypodius immaculatus* by Sharpe.

***Henicurus velatus sumatranus* subsp. nov.**

Differs from the typical Javanese form *H. v. velatus* in having a larger white frontal area in the males and a paler, brighter brown cap in the females. Size the same : five Javanese examples, wings 73-80 mm. ; eleven Sumatran birds, wings 77-80 mm.

Types. Adult male and female collected at Siolak Dras, Korinchi Valley, Sumatra 3,000 ft., on 27th March and 19th May, 1914, by H. C. Robinson and C. Boden Kloss. Nos. 458 and 1600.

***Phyllergates cucullatus thais* subsp. nov.**

Like *P. cucullatus cinereicollis* Sharpe, but the crown less rufous and paler, being raw sienna (Ridgway) tinged with golden, rather than pale amber brown (Ridgway).

The Bornean and Peninsular races differ from *P. cucullatus cucullatus* (Temm.) of Java and Sumatra (syn. *sumatranus* Salvad., based on an immature olive-crowned bird) in having the nape pure grey instead of grey suffused with dark brown and washed with olive.

Specimens examined. *P. c. cucullatus* : four from Java and eight from Sumatra. *P. c. cinereicollis* : twenty from the Federated Malay States. *P. c. thais* : five from Peninsular Siam (Kao Luang, Nakon Sri Tamarat, 5,000-5,800 ft.).

Type. Adult male from Kao Luang, 5,000-5,800 ft. collected on 30th March, 1922, by H. M. Pendlebury. Total length, 108, wing 44 mm.

***Oriolus cruentus malayanus* subsp. nov.**

The largest of all the forms of *O. cruentus* (Wagler).

Ten adult males from the mountains of the Malay Peninsula have wings 133-145 mm. Eleven adults of

O. c. consanguineus from Sumatra have wings 126–137 mm. (cf. Robinson and Kloss, Journ. F.M.S. Mus. VIII, pt. 2, 1918, p. 236) while nine examples of *O. c. vulneratus* of Borneo have wings 126–134 mm. (fide Meinertzhagen, Ibis, 1923, p. 94). We have no examples of the latter, but according to Meinertzhagen they are separable from *consanguineus* by their deep blue metallic gloss and larger blood-red area on the breast. The two are similar in size. All these are instantly separable from the typical *O. c. cruentus* of Java by the much greater amount of crimson on the breast and primary coverts. Ogilvie-Grant has already drawn attention to the greater size of Malayan as compared with Sumatran birds (Fasciculi Malayenses, Zool. III, 1905, p. 69).

Type. Adult male from the Semangko Pass, Selangor-Pahang Boundary, Malay States, 2,500–4,500 ft., collected on the 26th February, 1908. Wing 140 mm., bill from gape 32 mm.

Specimens examined, thirteen males and seven females from the mountains of Perak and Selangor, compared with fourteen males and eight females from Sumatra and three males and a female from Java.

In his "Revision of the genus *Oriolus*" Meinertzhagen (t. c. s. pp. 93–4) describes both sexes as similar. This is incorrect: we have already pointed out (t. c. s. p. 237) that the females are blackish throughout with at most, in a few individuals only, one or two crimson feathers on the breast. Young males, before the red appears, closely resemble the females.

***Dicaeum sanguinolentum ablutum* subsp. nov.**

Male. Like *D. s. sanguinolentum* Temm. of West Java; but with less red on the breast; throat and foreneck buffy, not suffused with red as in the typical race: in these respects intermediate between *D. s. sanguinolentum* and *D. s. ignipectus* (Hodgs.)

Female. Foreneck and breast grey washed with buff instead of buff washed with grey: rump and upper tail-coverts like the back (again as in *D. s. ignipectus*), not red as in *D. s. sanguinolentum*.

Types. Male and female from Tamansari near Banjoewangi, E. Java, 1,600 ft. Collected on 20th January, 1920, by C. Boden Kloss, Nos. 5603, 5605. Wings 50 and 48 mm. A second male was obtained on the same day, No. 5604. Wing 49 mm.

This bird seems quite distinct as a subspecies from *D. wilhelminae* Büttikofer, of Flores (Notes Leyd. Mus., XIV, 1892, p. 199) and *D. hanieli* Hellymayr, of Timor (Zoologie von Timor, I, 1914, p. 56, pl. I, figs. 1, 2).

V. MAMMALS AND BIRDS FROM THE HILLS OF NAKON SRI TAMARAT, PENINSULAR SIAM.

By H. C. ROBINSON AND C. BODEN KLOSS.

Something is known of the mountain fauna of Tenasserim where Muleyit, 6,500 ft., and Nwalabo, 5,100 ft., have been investigated ; and the mountains of the Federated Malay States have been explored with some thoroughness : but except for the work done by Dr. W. L. Abbott in Trang and by the F.M.S. Museums in Bandon¹ we know nothing of the zoology of the middle longitudinal range of the Malay Peninsula, *i.e.*, that running from Bandon to Perlis of which Kao Luang, 5861 ft., is the highest peak. A visit to the latter had long been part of our programme.

Mr. H. M. Pendlebury of the F.M.S. Museums Department visited Nakon Sri Tamarat in February, March and April, 1922 to collect insects (ante pp. 1—) and took with him a mammal and bird collector and Mr. W. J. F. Williamson sent a collector from Bangkok. These two men made collections on Kao Luang up to its summit and also at localities near its foot : we have listed below the specimens obtained ; but though the local occurrence of a number is of interest, they are not unexpected and had all previously been met with in the Peninsula. Only one slightly differentiated new form was secured (*Phyllergates cucullatus thais*). Few species occurred on the higher slopes that had not already been collected on the less lofty Kao Nong : of these the most interesting were *Rattus orbus* Rob. and Kloss, and *Cryptolopha youngi* Robinson, of which two examples were obtained. This fly-catcher was known previously from the unique type-specimen.

Mammals.

Hylobates lar (Linn.)	-	-	-	{ K. Ram 1200', K. Luang 2000'.
Presbytis femoralis keatii, Rob. & Kloss				{ K. Ram, 1200', K. Luang 2000'.
P. obscura flavicauda, Elliot.	-	-	-	K. Luang 2000'.
Paguma larvata robusta (Miller)	-	-	-	K. Luang 2000'.
Martes flavigula peninsularis (Bonh.)	-	-	-	K. Ram 1200'.
Galeopterus temmincki peninsulæ, Thos.	-	-	-	- K. Ram 1200'.
Tupaia glis wilkinsoni, Rob. and Kloss	-	-	-	{ K. Ram 1200', K. Luang 3000- 5800'.
Crocidura aequicauda, Rob. and Kloss	-	-	-	K. Luang 2000'.

¹ Vide Journ. Fed. Malay States Mus., Vol. V, 1914 : Birds, pp. 83-110 ; Mammals, pp. 111-127.

Hipposideros armiger debilis, K. And. - Hill Caves Nakhon Sri Tamarat.

Ratufa bicolor peninsulæ, Miller - K. Ram 1200'.
R. ephippium pyrsonota, Miller - K. Luang 2000'.
Sciurus erythraeus rubeculus, Miller - K. Luang 2000'.
Sc. vittatus mineatus, Miller - { K. Ram 1200',
- K. Luang 2000'.
Sc. tenuis surdus, Miller - - { K. Ram 1200'.
- K. Luang 2000'.
Sc. t. gunong, Rob. and Kloss - - K. Luang 3000-4500'.

Tamias maclellandi leucotis (Temm.) { K. Ram 1200',
- K. Luang 2000'.

[syn. *Sciurus novemlineatus* Miller]

Dremomys rufigenis belfieldi (Bonh.) - K. Luang 3000'.
Rattus sabanus vociferans (Miller) - K. Luang 2000'.
R. surifer surifer (Miller) - { K. Ram 1200',
- K. Luang 2000'.
R. orbus (Rob. and Kloss) - - K. Kuang 4500-5800'.
R. bukit bukit (Bonh.) - - K. Ram 1200'.
R. cremoriventer cremoriventer (Miller) - K. Luang 2000'.
R. whiteheadi (Thos.) - - K. Ram 1200'.
R. rattus diardi (Jent.) - - K. Ram 1200'.

[syn. *Mus griseiventer* Bonhote]

Birds.

Treron curvirostra nipalensis (Hodgs.) K. Luang.
Chalcophaps indica indica (Linn.) - K. Luang 5000'.
Ictinaetus malayensis (Gm.) - K. Luang 5000'.
Pernis p. ptilorhynchus (Temm.) - K. Luang 2500'.

[syn. *P. cristatus* Temm.]

Huhua sumatrana (Raffles) - - Ronpibun.

[syn. *Strix orientalis* Horsf. preoccupied by *Strix orientalis* Shaw]

Otus luciae siamensis, Rob. and Kloss - K. Luang 5500'.
Alcedo atthis bengalensis, Gm. - K. Ram.
Anorrhinus galeritus (Temm.) - K. Ram 1200'.
Berenicornis comatus (Raffles) - K. Luang 2000'.
Nyctiornis amictus (Temm.) - K. Luang 2000'.
Pyrotrogon diardi sumatranus (Blasius) K. Luang 2000'.

[syn. *P. d. neglectus* (Forbes and Robinson)]

P. oreskios uniformis Robinson - { K. Ram,
- K. Luang 3000',
Clamator coromandus (Linn.) - K. Keo.

<i>Surniculus</i>	<i>lugubris</i>	<i>dicruroides</i>	
(Hodgs.)	-	-	- K. Ram 2000'.
<i>S. I. brachyurus</i> , Stresemann	-	-	Ronpibun.
<i>Hierococyx fugax niscolor</i> (Hodgs.)	-	-	K. Ram 2000'.
<i>Penthoceryx sonnerati venustus</i> (Jerd.)	{		K. Ram 1200',
			K. Luang.
<i>Cacomantis s. sepulchralis</i> (Mueller)	-	-	K. Luang 2000'.
<i>Zanclostomus javanicus pallidus</i> , Rob.	{		K. Ram 1000',
and Kloss	-	-	K. Luang 2000'.
<i>Rhinortha c. chlorophaea</i> (Raffles)	-	-	Ronpibun.
<i>Phoenicophaes c. erythrognathus</i> , Bp.	-	-	K. Keo, K. Ram.
<i>Calorhampus fuliginosa hayi</i> (Gray)	-	-	K. Ram 1200'.
<i>Chotorhea mystacophanes</i> (Temm.)	-	-	K. Ram 1200'.
<i>Ch. chrysopogon laetus</i> , Rob. and Kloss	-	-	K. Luang 2000'.
<i>Cyanops davisoni</i> (incognita ?)	-	-	K. Luang 3000'- 5800'.
<i>C. duvauceli stuarti</i> , Rob. and Kloss	-	-	K. Luang 2000'.
<i>Picus puniceus continentis</i> , Rob. & Kloss	-	-	Ronpibun.
<i>Blythipicus rubiginosus</i> (Swainson)	-	-	K. Luang 2000'.
<i>Micropternus badius squamigularis</i> , (Sundev.)	-	-	- K. Luang 2000'.
<i>Callolophus mineatus malaccensis</i> (Lath.)	-	-	- K. Tong 300'.
<i>Chrysophlegma mentale humii</i> , Hargitt	-	-	K. Luang 2000'.
<i>Chrysocolaptes validus xanthopygius</i> , Hesse	-	-	- K. Ram 1200'.
<i>Dinopium j. javanense</i> (Ljung)-	-	-	K. Ram.
<i>Hemicercus concretus sordidus</i> (Eyton)	-	-	K. Ram 1200'.
<i>Calyptomena viridis continentis</i> , Rob.	{		K. Ram 1200',
and Kloss	-	-	K. Luang 2000'.
<i>Eurylaimus javanicus harterti</i> , van Oort	-	-	K. Luang 2000'.
<i>Corydon s. sumatranus</i> (Raffles)	-	-	K. Luang 2000'.
<i>Pitta i. irena</i> , Temm.	-	-	K. Luang.
<i>Hirundo hyperythra badia</i> , Cass.	-	-	Ronpibun.
<i>Hemichelidon sibirica fuliginosa</i> , Hodgs.	-	-	K. Ram 800'.
<i>H. ferruginea</i> , Hodgs.	-	-	- K. Luang 2000'.
<i>Alseonax latirostris</i> (Raffles)	-	-	Ronpibun.
<i>Cyornis anak</i> , Rob. and Kloss	-	-	- K. Luang 3000'.
<i>Anthipes solitaria submoniliger</i> , Hume	-	{	K. Ram,
			K. Luang 4000'.
<i>Rhinomyias olivacea</i> (Hume)	-	{	K. Ram 1200',
			K. Luang 2000'.
<i>Niltava grandis decipiens</i> , Salvad.	-	-	K. Luang 4300- 5500'.
<i>Poliomyias mugimaki</i> (Temm.)	-	-	K. Luang 5500'.

Muscicapula melanoleuca	wester-		
manni (?) Sharpe	-	-	K. Luang 5600'.
Hypothymis azurea styani (Hartl.)	-	-	K. Luang 2000'.
Rhipidura albicollis (Vieill.)	-	-	K. Luang 4300'.
Terpsiphone paradisi affinis (Blyth)	-	{ Ronpibun,	
		{ K. Ram 1200',	
		{ K. Luang 2-300'.	
Drymophila velata caesia (Less.)	-	{ K. Ram 1200',	
		{ K. Luang 2000'.	
Drymophila pyrrhoptera (Temmm.)	-	-	K. Ram 1200'.
Culicicapa c. ceylonensis (Swainson)	-	-	K. Luang 2000'.
Cryptolopha youngi, Robinson	-	-	K. Luang 3000-5800'.
Pericrocotus speciosus flammifer, Hume			K. Luang 2000'.
P. c. cinereus, Lafr.	-	-	K. Ram 1200'.
Aegithina t. tiphia (Linn.)	-	-	K. Tong 300'.
Aethorhynchus l. lafresnaye (Hartl.)	-	{ Ronpibun.	
		{ K. Luang 2000'.	
Chloropsis viridis zosterops (Vig.)	-	-	K. Ram 1200'.
C. icterocephala chlorocephala, Wald.	-	{ Ronpibun,	
		{ K. Ram 1200',	
		{ K. Luang 2000'.	
Irena p. puella (Lath.)	-	-	{ Ronpibun,
		{ K. Ram 1200',	
		{ K. Luang 2000'.	
Ixos c. cinereus (Blyth)	-	-	{ K. Ram,
		{ K. Luang 2000'.	
I. malaccensis (Blyth)	-	-	K. Ram 1200'.
I. maclellandi perakensis (H. & B.)	-	-	K. Luang 5500'.
Iole olivacea cinnamomeiventris,			{ K. Ram 1200',
Baker	-	-	{ K. Luang 2000'.
Brachypodius a. atriceps (Temmm.)	-	-	Ronpibun.
Criniger gularis tephrogenys, Jard. and			{ Ronpibun,
Selby	-	-	{ K. Ram 1200'.
C. o. ochraceus, Moore	-	-	{ K. Ram 1200',
			{ K. Luang 2000'.
Alophoixus p. phaeocephalus (Hartl.)			K. Ram 1200'.
Pycnonotus b. brunneus, Blyth	-	-	K. Ram.
P. c. cyaniventris, Blyth	-	-	K. Keo, K. Ram
			1200'.
Otocompsa flaviventris minor, Kloss	-	-	K. Luang 2000'.
R. squamata webberi (Hume)	-	-	{ K. Ram 1200',
			{ K. Luang 2000'.
Eupetes m. macrocerus (Temmm.)	-	-	K. Luang 2000'.
Trochalopteron melanostigma penin-			
sulae, Sharpe	-	-	K. Luang 5000'.
Pomatorhinus olivaceus fastidiosus,			
Hartert	-	-	K. Luang 2000-5500'.

Malacocincla a. abotti, Blyth	-	-	Ronpibun.
Horizillas m. magnirostris, Moore	-	{	K. Ram 1200',
			K. Luang 2000'.
Horizillas cinerea (Eyton)*	-	-	K. Ram 1200',
			K. Luang 2500'.
Drymocataphus capistratus nigricapitatus (Eyton)	-	-	K. Ram 1200'.
D. tickelli australis, Rob. and Kloss	-	{	K. Ram 1200',
			K. Luang 2000'.
Turdinulus epilepidotus granti, Richmond	-	-	K. Ram 1200'.
			K. Luang 2000'.
Corythocichla brevicaudata leucosticta, Sharpe	-	-	Ronpibun.
Alcippe cinerea, Blyth	-	-	K. Ram.
A. phaeocephala davisoni, Harington	-	{	K. Ram 1200'.
			K. Luang 2000'.
Stachyris nigriceps davisoni, Sharpe	-	-	K. Ram.
			K. Luang 2000'.
Stachyridopsis chrysaea chrysops, Richmond	-	-	K. Luang 3000-5000'.
Thringorhina striolata guttata (Tickell)			K. Luang 2000'.
Cyanoderma e. erythroptera (Blyth)	-		K. Ram 1000'.
Mixornis rubricapilla connectens, Kloss			K. Ram.
Heteroxenicus l. leucophris (Temm.)	-		K. Luang 5000-5800'.
Siva cyanoptera sordidior, Sharpe	-		K. Luang 5500'.
Herpornis zantholeuca interposita, Hartert	-	-	K. Luang 2000-3000'.
Pterythius flaviscapis aeralatus (Tickell)			K. Luang 4300-5500'.
Mesia a. argentaurus, Hodgs.	-	-	K. Luang 3000-5800'.
Geocichla c. citrina (Lath.)	-	{	K. Ram 1000',
			K. Luang 1200'.
Oreocincla aureus horsfieldi, Bp.	-	{	K. Ram 1200',
			K. Luang 2000'.
Henicurus ruficapilla, Temm.	-	-	Ronpibun,
			K. Luang 2000'.
H. frontalis (Blyth)	-	-	K. Luang 2000'.
Larvivora c. cyanea (Pall.)	-	-	K. Ram,
			K. Luang 2000'.
Kittacincla malabarica interposita, Rob. and Kloss	-	-	K. Ram 1200',
			K. Luang 2000'.
Orthotomus atrigularis (Temm.)	-	{	Ronpibun,
			K. Ram,
			K. Luang 2500'.
Phylloscopus occipitalis coronatus (Temm.)	-	-	K. Ram 1200'.

Phyllergates cucullatus thais, Rob. and Kloss	- - - -	K. Luang 5000-5600'.
Hemipus p. picatus (Sykes)	- -	K. Ram 1200'.
Tephrodornis pelvicius annectens, Rob. and Kloss	- - - -	K. Luang 2000'.
Melanochlora sultanea flavocristata (Lafr.)	- - - -	K. Ram 1000', K. Luang.
Dendrophila frontalis saturator, Hartert		K. Ram 1000'.
Dicrurus annectens, Hodgs.	- -	K. Luang 3000'.
Motacilla cinerea melanope (Pall.)	-	K. Ram 1200'.
?Aethophyga nipalensis (Hodgs.)	-	K. Luang 5000-5800'.
Anthreptes m. macularia, Blyth	-	K. Ram 1200'.
[syn. <i>Anthreptes hypogrammica</i> Müll.]		
Arachnothera affinis modesta, Eyton	-	K. Luang 2000'.
Dicaeum t. trigonostigma (Scop.)	-	K. Ram.
Prionochilus m. maculatus, Temm.	-	K. Ram 1200',

[We have not discussed these birds here as a full account of the ornithology of the Siamese portion of the Peninsula by ourselves is now appearing as Volume V of the "Journal of the Natural History Society of Siam."]

VI. FOUR NEW SPECIES OF BOMBUS FROM THE
MALAY PENINSULA.

By H. M. PENDLEBURY, F.E.S.

Systematic Entomologist, F.M.S. Museums.

There appears to be no specific record of *Bombus* from the Malay Peninsula: I herewith give descriptions of four species which occur within our faunal area.

These species seem to be local in habitat; and only occur, so far as is at present known, on the tops of some of the higher hills in the Peninsula: they have not yet been taken below 3,000 feet. Their habits are probably very similar to their British representatives though it has not been established, in all cases, which species make their nests near the surface and which burrow under ground.

Hymenoptera.*Fam. Apidae**Genus, Bombus, Latr.***1. *Bombus discrepans* sp. n.**

♀ Black, with black pubescence; the three apical abdominal segment clothed with fulvous; intermediate and hind tibiae and tarsi testaceous with ferrugineous pubescence; wings flavo-hyaline, veins brown.

Head and face with long pubescence on the front, between the antennae and above the clypeus; the clypeus with a few scattered punctures, shining. Mandibles shagreened, with short golden pile in the grooves; labrum incised, ciliated with rufous hairs. Fore legs: tibiae piceous, covered with short ferrugineous and a longer black pubescence which does not reach to the apex. Tarsi ferrugineous, basal joint above with some black hair.

♂ Smaller. Head and thorax with a shorter black pubescence mixed with lighter coloured hairs. The two basal abdominal segments above covered with light chestnut pubescence which on the basal segment is longest laterally, that on the second segment being mixed with black hair (in some specimens this segment is entirely black).

Wings lighter flavo-hyaline, with a distinct smoky suffusion at margin not reaching the cells.

Second joint of flagellum about one and a quarter times as long as the third. Labella not longer than the labial palpi, second joint of maxillary palpi long and thin.

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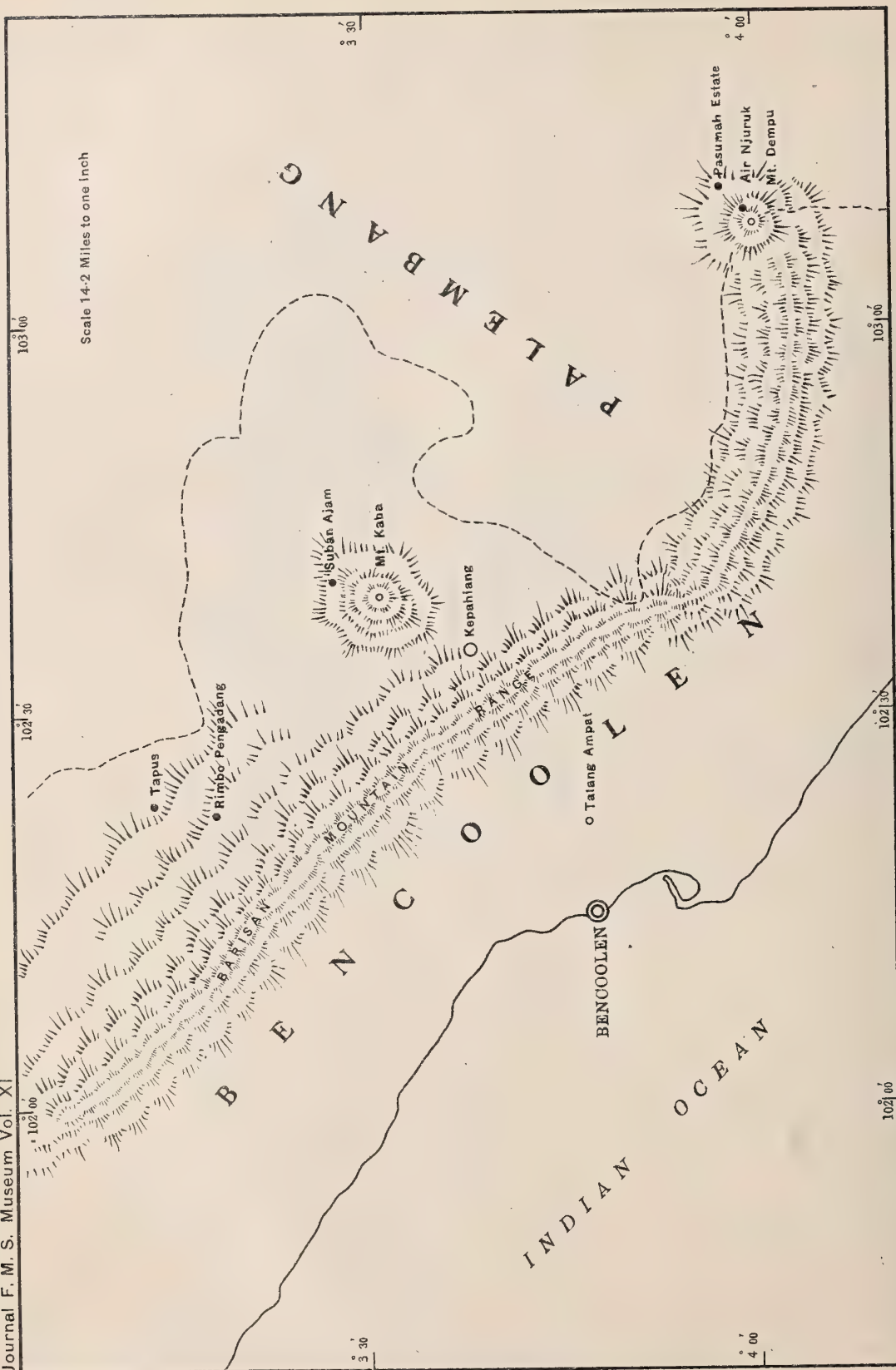
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X. ON A LARGE COLLECTION OF BIRDS CHIEFLY
FROM WEST SUMATRA MADE BY MR. E. JACOBSON.

By H. C. ROBINSON AND C. BODEN KLOSS,
with notes by the collector.

(Plates VI-XI and three maps).

The large and interesting collection of birds of which an account is given in the following pages was entrusted to us by Mr. E. Jacobson in 1918. Owing to a variety of causes for which we are not responsible publication has been greatly delayed and for this our apologies are due to Mr. Jacobson. The collection contains much valuable material but owing to the fact that the districts worked have been much collected over by other naturalists the number of actual novelties is not large.

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I. INTRODUCTORY NOTES.

By E. JACOBSON.

Between the years 1913 and 1917 several collecting trips were made by me in different parts of Sumatra, viz., in the Padang Highlands, Korinchi, Bencoolen and Palembang.

All together 3021 specimens were obtained, from which 411 were presented to the Museum of Natural History at Leyden (Holland). Nothing has been published up to now about this part of the collection. 198 specimens were presented to the Museum at Kuala Lumpur ; 109 specimens were lost or destroyed by different causes. 2,500 specimens of this collection, including the 198 presented to the Museum at Kuala Lumpur have been examined by Messrs. Robinson and Kloss. A list of species or subspecies first recorded from Sumatra or described as new to science from specimens obtained by me, will be found at the end of the systematic list.

The collection, of which the present paper treats, will ultimately be presented to the Leyden Museum of Natural History, with the exception of the specimens now in possession of the Museum at Kuala Lumpur.

A list of the *Collecting Stations* is given, with a short description of their surroundings, and their situation is to be gathered from the accompanying maps. The names of the places are spelt as they appear on the Dutch Topographic Map, but the Dutch latter *œ* has been altered to *u*, in accordance with international custom.

The *native names* were often very difficult to ascertain as natives are seldom able to recognize a bird after it has been skinned. Besides, the inhabitants of the Padang Highlands who speak the Minangkabau dialect of the Malay language are very poor ornithologists; usually only those birds, which they eat, or which cause great damage to their crops, or which are kept in cages, are known by name. In this respect they stand very far behind the inhabitants of Java, who, as a rule, are able to name most of the native birds.

Just as in other countries the birds have often different names in the various districts and sometimes the same name applies to different species in different places. The dialect spoken in the Ophir Districts is a slight variant of that of Minangkabau proper.

The contents of the stomach have been examined and recorded by me in only a limited number of cases, as I was mostly overwhelmed with work when I was in the jungle.

Nearly all the birds have been shot by myself, the skins being prepared by my native taxidermists. During my trip in Bencoolen and Palembang I had the assistance of two native taxidermists and hunters from Kuala Lumpur, for which I herewith acknowledge my thanks to Mr. H. C. Robinson.

My collection comprises proportionately a greater number of groundbirds than is usually found in other collections. This is due to the fact that I made an extensive use of snares, laid in the usual native way in openings left in long low hedges, which were made by my men in the jungle. These hedges sometimes had a total length of some miles and contained hundreds of snares. For this work I usually had with me a number of natives from Korinchi, who were experts in snare setting.

The time of the day at which birds are most lively is from 5.30 to 6 a.m. and from 4.30 to 5.30 p.m.; during these hours they move about in the forest in search of food, and their song may be heard.

Most birds do not travel through the forest singly, in pairs or in small flocks, composed of birds of the same kind, but they mostly go in larger flocks, made up of a great variety of species. Such a *mixed flock* may consist of birds feeding on insects together with other kinds living on fruits only.

Their progress through the forest is not so very fast ; some kinds moving in the crowns of the trees, others nearer to the ground amongst the bushes, according to the individual habits of each species. The mixed flocks are very often headed by particular kinds of birds ; in the mountain forest of Sumatra I usually observed *Rhipidura albicollis atrata* or *Bhringa remifer* in the vanguard. Not all kinds of birds join these mixed flocks ; birds of prey, of course, never form part of them.

Pericrocotus sp., *Rhipidura albicollis atrata*, *Dendrositta azurea expectata*, *Cryptolopha*, *Hemipus picatus*, *Parus major malayorum*, *Zosterops buxtoni*, *Sibia picaoides simillima*, *Pyrotrogon oreskios*, *Picumnus innominatus malayorum*, *Culicicapa ceylonensis*, *Mesia laurinae*, *Bhringa remifer*, are some of the birds which I observed travelling in mixed flocks.

It is exceedingly curious that the mixed flocks of birds are often accompanied by squirrels, viz., *Sciurus tenuis*. This fact I observed repeatedly on different mountains in Sumatra.

The mixed flocks do not only occur in the forest : I observed them very often in my own garden at Fort de Kock. These flocks are much smaller, not more than perhaps six to twelve birds, and consist of a small number of species. They visit my own and the neighbouring gardens in the morning at about 7 a.m. The flock is usually made up of the following species : *Parus major malayorum*, *Aegithina viridis*, *Orthotomus cineraceus*, *Zosterops buxtoni*, and *Leptocoma jugularis*.

II. COLLECTING STATIONS.

By E. JACOBSON.

The following collecting stations will be found on the accompanying maps. The places Serapei and Penatei in *Korinchi* are not shown. They are situated on the Merangin River to the south-east of Sandaran Agung.

Air Bahar, Mount Dempu, Pasemah, Palembang, 1200 M.

See under Mount Dempu.

Air Gaung Ketjil, Mount Dempu, Pasemah, Palembang, 1800-1900 M.

See under Mount Dempu.

Air Njuruk, Mount Dempu, Pasemah, Palembang, 1200-1800 M.

See under Mount Dempu.

Air Sarasah, Mount Talamau (Mount Ophir), N.W. slope, Ophir Districts, 1850–1900 M.

See under Mount Talamau.

Air Taman, Mount Pasaman (Mount Ophir), Ophir Districts, 300 M.

See under Mount Talamau.

A stream on the N.W. foot of Mount Pasaman, where old forest with enormous trees is to be found. This forest is rapidly disappearing, on account of the coffee estates, which have been opened there lately. This old forest has very little undergrowth and is easy of access. Only one day's collecting was done here, sickness preventing me from visiting this place again, which was very unfortunate, as its fauna was exceedingly rich.

Alahan Pandjang, Padang Highlands, 1500 M.

Alahan Pandjang is a settlement not far from the border of the lake called Danau di Atas. The surroundings of the place are nearly bare of trees, for the natives burn down nearly every year all the growth on the hills, to obtain the ashes for fertilizing their rice fields. The country therefore is largely covered with ferns, grass and bushes, which shoot up every year afresh. On the opposite side of the lake and along the headwaters of the Batang Hari some forest still exists, and the higher slopes of the Barisan Chain running to the west of the lake are still forest clad. The fauna of Alahan Pandjang, however, is very poor. On the lake some waterfowl are to be found.

Andalas, Tandjung, Padang Highlands, 720 M.

A village situated in a narrow valley running towards Bukit Marapalam. The valley itself is cultivated and the slopes planted with cinnamon gardens or clad with secondary forest, which further on towards Mt. Sago merges into older forest.

Aur, Kumanis, Padang Highlands, 200 M.

A village near the Batang Sinamar. The surroundings consist chiefly of flat country, covered by bush, alternating with patches of short turf and larger or smaller areas covered by trees. Many little pools surrounded by trees and covered with reeds and other waterplants attract small numbers of ducks which are, however, much hunted by the natives. To the east a belt of secondary forest covers the foot of the Bukit Ngalau Saribu, a mountain chain of limestone with hundreds of caves and jagged peaks.

Nowhere in the Padang Highlands have I seen so many birds of prey as in the surroundings of Aur.

Balun, Muara Labu, Padang Highlands, 480 M.

A hamlet in the valley of the Air Siliti, enclosed by two parallel chains of the Barisan Range. The floor of the valley is covered with rice-fields, but the enclosing hills are clothed with forest.

Bartagak, Sungai Puar, Padang Highlands, 1100 M.

A village against the N.W. slope of Mt. Merapi.

The surroundings are divested of forest, but a little swamp near by is a gathering place for all kind of waterfowl.

Baso, Agam, Padang Highlands, 900 M.

The plain of Agam is intensively cultivated, chiefly with rice.

The avifauna round the place is very poor.

The place is situated on the railway from Fort de Kock to Pajokumbuh.

Bencoolen (town), 5 M.

The town of Bencoolen on the West coast of Sumatra, was to me of special interest as collecting ground, as Sir Stamford Raffles, when governor of Bencoolen, obtained most of his zoological specimens from its surroundings, which now, however, look quite different from what they were in Raffles' time. The forest has nearly entirely vanished to be replaced by cultivated grounds or *lalang* plains. Not very far from the town there is still some swampy forest, where I obtained a number of interesting specimens.

Biaro, Agam, Padang Highlands, 900 M. Railway station.

A village near Baso, with the same kind of surroundings as Bencoolen.

Bondjol, Agam, Padang Highlands, 220 M.

This village is situated in the region of the volcanic tufa grounds, interspersed with many hills with nearly perpendicular sides. The flat tracts of country are cultivated and the hills covered with much devastated secondary forest or scrub bush. I only stopped here a few hours as the place is not promising for collecting.

Bukit Barampung, Supajang, Padang Highlands, 1400 M.

The country is nearly entirely deprived of forest or trees through the natives regularly burning down all vegetation. Only isolated clumps of trees are found near the villages.

Bukit Sonsang, Solok, Padang Highlands.

I did not visit this place, but only obtained by purchase one fruit pigeon, said to have been trapped there,

Buo, Padang Highlands, 280 M.

The country round this village is entirely cultivated. The gardens and plantations yielded a good number of birds and here, as in Aur, I obtained a large collection of birds of prey.

Near Buo is a well-known cave, formed by a river, which flows underneath a range of limestone hills.

Danau di Atas (lake), Alahan Pandjang, Padang Highlands, 1500 M.

See under Alahan Pandjang.

Fort de Kock, Agam, Padang Highlands, 920 M.

The principal town of the Padang Highlands, entirely surrounded by cultivated grounds. No forest is to be found in its direct vicinity, but the deep canyon, on the brink of which the place is situated, harbours in its narrow side clefts some species of birds one would not expect in such cultivated surroundings.

Fort van der Capellen, Padang Highlands, 465 M.

The surroundings are entirely cultivated ; there are extensive cinnamon plantations.

Mount Dempu, Pasemah, Palembang, 900–2400 M.

On the N.W. foot slope of this mountain I pitched my camps at different altitudes. The foot of the mountain is covered with coffee plantations and secondary forest.

The old forest begins at 1200–1300 M. and reaches up to 1900 M., where it gradually thins out, to be replaced by smaller trees, covered over by thick cushions of moss and standing further apart.

At 2000 M. the trees are dwarfed and all is merged in a mass of ferns and low plants. At 2400 M. low bushes of *Rhododendron* and *Gaultheria* have replaced the other trees ; above this zone the flora takes an alpine character, various *Vacciniums*, *Anaphalis*, and other high mountain plants making their appearance. My lowest station on the Dempu was at the coffee plantation Pasumah Estate, 900 metres, where a stretch of secondary forest yielded many specimens of birds.

The next station was a camp, which I pitched in the old forest on the Air Njuruk (1400 M.), an insignificant brook. It was situated between two other watercourses, the Air Bahar and the Air Gaung Ketjil, the last one being a wild mountain brook, running in a deep ravine with nearly perpendicular walls. The forest at this zone was composed of very tall trees, and the undergrowth was easy to cut through.

Several collecting excursions were made up to 2400 M., and I camped several days at 1900 m. but failed to reach the top (3120 M.) of the mountain on account of the bad weather. The rainfall on Mount Dempo is very considerable.

Mount Singgalang, Agam, Padang Highlands, 1200 M.

The mountain slopes are cultivated up to a height of 1800–1900 M., and the original forest there has been destroyed and replaced by plantations of sugar cane, tobacco, potatoes and other foodplants, or has turned intoalangfields. Only in some ravines a little secondary forest has sprung up. Above the cultivated zone the mountain forest begins, but it has been deprived of its heavy trees which have been felled by the natives. The forest towards the top (2877 M) is, as usual at this altitude, of an alpine character.

Unfortunately, I have only collected on the lower slopes of the mountain ; it would have been interesting to investigate again the avifauna of this mountain, where Beccari made his well-known collection in 1878. Conditions have altered considerably since then, at least the North slope of the mountain has been denuded of forest to a great height. The south and west slopes however are still densely forested and the species which have disappeared from the north and east slopes will have found there a suitable retreat.

Mount Talamau (Mount Ophir), Ophir Districts, 400–1500 M.

Mount Talamau (2912 M) forms together with the lower Gunong Pasaman (2190 M.) a twin mountain, to which European seamen have given the name of Mount Ophir. It is not to be confounded with Mount Ophir in Malacca. The Sumatran Ophir rises directly from the coastal plain of the Padang Lowlands. The mountain is from about 400 M. upwards still clothed with primæval forest, which in some places even descends to a level of 150 to 200 M. It will not be long before these mountain forests, at least up to a height of about 1500 M., will fall a victim to European cultivations, as most of the ground round this mountain has now been given out for coffee and tea plantations. It is therefore fortunate that I have been able to investigate thoroughly the fauna of this mountain while it was still untouched. Our lowest camp was at 400 M., where native coffee plantations and dry ricefields bordered the old forest. The next camp was pitched at 1000 M. in a forest with big trees and a very dense undergrowth of which rattan formed a considerable but not much appreciated part. The next station was at 1300 M. with much the same vegetation. At about 1700 M.

the rattan thickets were more impenetrable than I have seen them on any other mountain in Sumatra. At 1900 M. a camp was made near the Air Sarasah, a small mountain stream in a ravine with perpendicular walls. The forest thins out considerably at this altitude, the trees being covered with moss. The undergrowth consists for a great part of the Gingerwort *Alpinia*. About 200 M. higher up the forest disappears abruptly, to be replaced by dwarfed trees and bushes standing further apart, and the ground is covered with a tangled mass of ferns, creepers and grasses. Near the top a plateau occurs (2780 M.), this being the old crater, filled up except for a number of small pits with perpendicular sides.

The plateau is clothed with a carpet of lichens, and a scanty growth of grass, *Vaccinium*, *Rhododendron*, and a number of other tropical alpine plants.

Only three species of birds were found at this altitude. At my camp on the plateau I noted temperatures of 6° C above zero at night. The rainfall on the lower slopes of the mountain is very heavy and from 6000–7000 mm. a year.

Kamang, Agam, Padang Highlands, 880 M.

The valley of Kamang is covered by ricefields and numerous villages, with their usual gardens. The hills enclosing the valley are chiefly of limestone covered with secondary forest. The country is partly swampy and in some places large numbers of waterfowl can be found.

Kodjai, foot of Mount Talamau (Mount Ophir), Ophir Districts, 280 M.

This little hamlet is surrounded by ricefields and plantations.

Korinchi Peak, Korinchi.

The Peak (3806 M.) is on the frontier between the Padang Highlands and Korinchi. I ascended it from the Korinchi side, coming from Sungai Kumbang. Very little collecting was done by me from 1500–2200 M.

I only obtained some specimens at a camp called by the natives Sungai Kring Ilir (1500 M.), where the Sungai Kring reaches the border of the Danau Bento, covered with old forest.

At 2220 M. I found an old camp of Messrs. Robinson and Kloss, who had been here the year before. The place was called by the natives Sungai Kring Ulu.

The trees at this altitude were low, with an undergrowth of *Vaccinium* bushes and other alpine plants. I reached the top of the Peak but did not collect above 2200 M.

Koto Alam, Pajokumbuh, Padang Highlands, 320 M.

Although this village is under the administration of the Padang Highlands, it belongs geographically to the east coast. The country has lost nearly all of its forest through the reckless methods of native cultivators.

Koto Tengah, Salimpaung, Padang Highlands, 900 M.

A village in the saddle between Mount Merapi and Mount Sago, surrounded by ricefields, plantations and some secondary forest.

In its vicinity are some little pools harbouring waterfowl.

Koto Tuo, Mount Singgalang, Agam, Padang Highlands, 1000 M.

A village at the north foot of Mount Singgalang, surrounded by ricefields, sugarcane, and tobacco plantations; there are also some cinnamon gardens.

Kubuk Krambil, Batipuh, Padang Highlands, 600 M.

Village on the south foot of Mount Merapi, with ricefields and native plantations.

Kumanis, Padang Highlands, 200 M.

This village lying on the Sinamar river, has much the same surroundings as Aur.

Kumpulan, Agam, Padang Highlands, 200 M.

To this village the same details refer as to Bondjol.

Lubuk Landur, N.W. foot of Mount Talamau, Ophir Districts, 200 M.

A village surrounded by ricefields and scrub bush.

Lubuk Sikaping, Padang Highlands, 440 M.

The place lies in a cultivated longitudinal valley enclosed by some parallel mountain ranges, covered with primæval forest and rising to a height of 2200 M. On the slopes bordering the valley there is secondary forest.

Muara Kiawai, Ophir Districts, 40 M.

I stopped here at a coconut plantation situated in the coastal plain, which in this place is one vast but easily accessible swamp, for the greater part still covered with forest. This swampy forest was one of the best collecting grounds I found and it is here that I obtained the only example of *Indicator archipelagicus*. On the dryer parts of the land are some small villages.

Muara Sako, Bukit Barisan, Indrapura, West coast Sumatra, 300 M.

A resthouse on the path from Tapan in the Padang Lowlands to Korinchi across the Barisan Chain, which

follows up to this point the valley of the Air Tapan. The surrounding heights are covered with forest. Argus pheasants are very numerous at this place.

Padang Tarap, Agam, Padang Highlands, 740 M.

Station on the railway from Fort de Kock to Pajokumbuh. The village is lying in a valley enclosed by limestone hills, and surrounded by ricefields and plantations.

Painan, Padang Lowlands, sea level.

A small place on the seacoast with numerous village gardens and coconut groves. Near the shore are some coral reefs emerging from the water.

Pajokumbuh, Padang Highlands, 500 M.

Populous place with extensive village gardens and coconut plantations; the plain in which the place is lying is partly swampy and converted into ricefields. Tobacco is planted on a large scale. No forest in the immediate vicinity.

Palembajan, Agam, Padang Highlands, 790 M.

The same kind of surroundings as Bondjol.

Palembang, Eastcoast of Sumatra, 5 M.

The town lies on the river Musi surrounded by swamps.

Palupuh, Agam, Padang Highlands, 640 M.

The same formation as Bondjol, but on the mountain above the place old forest is still growing.

Pangkalan Koto Baharu, Pajokumbuh, 120 M.

To this place the remarks made about Koto Alam also apply.

Pantjuran Gading, Bukit Barisan, Korinchi, 1000 M.

A hamlet in the Barisan Chain on the path from the Padang Lowlands to Korinchi. A little stream flows by and the heights enclosing it are densely covered with forest.

Pasir Ganting, Indrapura, Padang Lowlands, sea level.

Village on a sandy beach near the mouth of the Tapan river. Behind the shore the usual scrub bush and a number of lagoons are to be found. Further inland the country is covered by vast swampy forests.

Pasumah Estate, Mount Dempu, Pasemah, Palembang, 900 M.

Coffee estate; see under Mount Dempu.

Penatai, Korinchi, 300 M.

A resting place for carriers on the path from Djambi on the Eastcoast of Sumatra to Korinchi. The Merangin

river flows here through old forest which covers the country for hundreds of miles.

Along the path are clearings where natives make temporary plantations.

Puntian, Kumanis, Padang Highlands, 280 M.

Some native houses on the slopes of the Bukit Ngalau Saribu, a chain of limestone peaks covered with a dense forest, but not containing much heavy timber. Thorny bushes and spiny trees, however, are abundant.

Many clearings are totally devoid of trees and covered by lalang fields.

Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

Government resthouse on the road from Bencoolen to the goldfields of Muara Aman. The place lies on one of the numerous chains of the Barisan Range. The heights near the road are covered with secondary forest containing much rattan as undergrowth, but more inland heavy forest is to be found.

Sandaran Agung, Korinchi, 733 M.

Near the village a Government resthouse is situated on the border of the Lake of Korinchi, where the Merangin river leaves the lake.

The shore is more or less swampy with growths of reeds, rushes and other aquatic plants, harbouring an enormous number of waterfowl.

The country around has been turned into ricefields, and the hills, which near Sandaran Agung approach the lake, are covered with bush or low secondary forest. At this place Messrs. Robinson and Kloss also collected.

Serapai, Korinchi, 800 M.

A Government resthouse on the path from Djambi to Korinchi. The Air Serapai is a little brook, running through the great forest mentioned already under Penatai. This place proved to be a very good collecting ground.

Singkarak, Padang Highlands, 400 M.

A village near the east end of the Lake Singkarak, where the river enters. The country is entirely cultivated and has no forest in its vicinity. A little swamp lies near the place, which is surrounded by ricefields, village gardens and plantations.

Siulak Daras, Korinchi, 800 M.

Village in the extreme north of the valley of Korinchi, enclosed by parallel chains of the Barisan Range. Near the village some ricefields, on the surrounding hills native

coffee plantations, and young forest ; higher up the old forest is still standing.

The place was also visited by Messrs. Robinson and Kloss.

Suban Ajam, Mount Kaba, Redjang, Bencoolen, 1000–1200 M.

A coffee estate on the road from Bencoolen to Palembang. Collections were made in the coffee plantations and in the clearings around and labelled “Suban Ajam, 1000 M.”

The specimens marked “Suban Ajam, 1200 M.,” came from a camp, which I pitched some miles from the estate in the primæval forest, nearer to the foot of Mount Kaba.

This forest contained very heavy timber and was easy to penetrate on account of numerous elephants tracks. My plan to camp higher up on the mountain was prevented by deluges of rain, which fell during my stay.

Sukamananti, Ophir Districts, 200 M.

Village in the plain at the N.W. foot of Mount Ophir. The surroundings consist of ricefields and lalaŋ plains with scrub bush.

Sungai Kring Ilir, Korinchi Peak, Korinchi, 1500 M.

See under Korinchi Peak.

Sungai Kring Ulu, Korinchi Peak, Korinchi, 2200 M.

See under Korinchi Peak.

Sungai Kujung, Indrapura, Padang Lowlands, sea level.

A hamlet on the road from Painan to Indrapura and lying in the littoral swamp, which covers a great part of this coast. The swampy forest is cleared away around the settlement.

Sungai Kumbang, Korinehi, 1400–1600 M.

On the Korinchi side (the south side) of the Peak lies a vast swamp, the Danau Bento, for the greatest part covered by swampy forest and floating masses of grass and other plants, with very little open water. On the border of this immense swamp, covered by old forest, a small clearing has been made. The country around is one of the best collecting grounds I encountered.

Messrs. Robinson and Kloss had stayed here some time a year before I came to the same place.

From Sungai Kumbang a path leads through uninterrupted forest along the border of the swamp to the foot of the Peak of Korinchi.

The camp itself is at 1400 M., but I collected on the adjacent heights up to 1600 M.

Sungai Penuh, Korinchi, 780 M.

The principal place in Korinchi, situated about the centre of the absolutely level plain and surrounded by ricefields, gardens, and marshes. The slopes of the adjacent hills are covered with native coffee plantations or lalangfields. There is no forest in the vicinity, as the slopes of the Barisan Chain have been cleared up to 1000 M.

Surian, Alahan Pandjang, Padang Highlands, 1050 M.

A coffee estate on the headwaters of the Batang Hari, in a valley running between two parallel chains of the Barisan Range. All the forest has been cleared on the lower slopes, and only more inland and at greater heights is it untouched.

Tabat Patah, Salimpaung, Padang Highlands, 1000 M.

The same kind of surroundings as Koto Gadang.

Talang Ampat, Bencoolen, 40 M.

The village is situated in an undulating plain, covered by lalang fields, scrub bush, and scanty young forest. In Raffles' time the place must have been covered with heavy forest.

Talu, Ophir Districts, 520 M.

The place is situated where, in a former geological period, a crater lake must have existed. Part of the crater walls are still left, now clothed with secondary forest and scrub bush. The former lake bottom is now a level plain, covered by ricefields and plantations.

Taluk, Buo, Padang Highlands, 240 M.

The same kind of country as Buo.

Tanangtaluk, Ophir Districts, 1000 M.

A tea estate in the Barisan Range ; the country around is covered by old forest with many clearings.

Tapus, Lebong, Bencoolen, 800 M.

A place near the Ketahun river, surrounded by native plantations and very young forest.

Tulas, Muara Kiawai, Ophir Districts, 40 M.

A little settlement on the border of the great swamp of Muara Kiawai.

Ulu Air, Pajokumbuh, Padang Highlands, 820 M.

The highest point of the road from Pajokumbuh in the Padang Highlands to the east coast. The same kind of country as Koto Alam.

III. SYSTEMATIC LIST.

By HERBERT C. ROBINSON AND C. BODEN KLOSS.

Field Notes by E. JACOBSON.

1. A reference to the original description, with type locality, will be found in our *second* list of the birds of Sumatra (Journ. Fed. Malay States Mus. VIII, part 2, 1923, pp. 319-362) under the names used here.

2. The quotation, R. & K., I, refers to the "Results of an Expedition to Korinchi Peak, Birds" by H. C. Robinson and C. Boden Kloss, published in the Journal of the Fed. Malay States Museums, VIII, pt. 2, 1918, pp. 81-262.

3. The quotations "R. & K., II," and "R. & K., III," refer to two papers on "A collection of birds from N. E. Sumatra" by H. C. Robinson and C. Boden Kloss, published in the Journal of the Straits Branch of the Royal Asiatic Society, No. 80, 1919, pp. 74-133 and No. 81, 1920, pp. 77-115.

A reference to the first paper is given in all cases where species are common to both collections; but only to the two last papers when species are recorded therein under a different name or are the subject of discussion.

PHASIANIDAE.

1. *Rhizothera longirostris longirostris* (Temm.).

2 ♂. Muara Kiawai, 40 M.; Ophir Districts.
Tanangtalu, 1000 M.

Iris light brown to greyish brown, bill horn-black, at the tip transparent brownish white, feet and claws whitish.

Wings 187, 187 mm.

These birds, which may be regarded as strictly topotypical, have the feathers of the base of the neck with less black than others from the Malay Peninsula and Borneo. The differences are probably individual or associated with age.

2. *Arborophila rubrirostris* (Salvad.).

Arboricola rubrirostris R. & K., I, p. 99.

8 ♂, 8 ♀, 1 ♀ pull. Sungei Kumbang, Korinchi,
1400-1600 M.

♂, ♀. Sungei Kring Ulu, Korinchi Peak, 2200 M.

♂, ♀. Air Njuruk, Mt. Dempu, Palembang,
1800 M.

To the colours of the soft parts given by Robinson and Kloss, may be added that the iris has an outer ring of a greyish tint, especially noticeable posteriorly.

Wings, ♂ 128, 142, 137, 140, 143, 133, 140, 140, 133 mm., 136 mm.

♀ 128, 127, 128, 131, 138, 127, 132, 136, 133, 129 mm.

In this series the black markings on the back and underparts of the females are much heavier and more extensive than in the males while the foreneck is largely black against a foreneck largely white in the male.

Description of the chick :—

♀ pull. Sungei Kumbang, 30th August, 1915,
No. 5028.

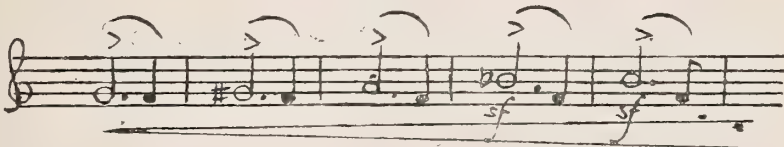
Above chocolate, the crown and rump more reddish, forehead and a long supercilary stripe to the sides of the neck, mixed blackish and silvery on the sides of the neck, beneath this silvery stripe a sooty black patch. Beneath white, a broad pectoral band reddish chocolate, thighs reddish chocolate, wing coverts tipped with buff.

Iris dark grey, bill black, base of lower mandible and at the tomia red, feet dull orange.

The chick when caught was extremely alert, much more than the chickens of the domesticated fowl.

The birds are always found in pairs or small coveys ; they are easily caught in snares. The snares used in Korinchi are made of the fibres of *Arenga saccharifera* Labill., and consist of a string of about one metre with some twenty nooses attached to it. The string is fastened horizontally near the ground across a path in the jungle and then the call of the bird is imitated.

This call sounds like :



The birds in the vicinity at once answer to the call, at the same time approaching more and more. When they have come very near, they utter a different call

sounding like :



At last one of the birds runs into the snare, and when it struggles in the noose its mate will usually come to its

rescue to get entangled in its turn. At night the birds roost on low trees and bushes. They bear captivity very well, if given a roomy enclosure and fed on worms and insects.

3. *Arborophila orientalis sumatrana* Grant (Plate VI).

2 ♂, 1 ♀. Suban Ajam, Mt. Kaba, Bencoolen,
1200 M.

Iris dark brownish grey, orbital skin dull red, with dusky spots, skin at the throat red, bill brownish black, feet dull coral red.

Wings, ♂ 143, 137 ; ♀ 131 mm.

A male and the female have the throats dusky rather than white.

Lives in dense primæval forest.

4. *Caloperdix oculatea sumatrana* Grant (Plate VII).

R. & K., I, p. 100.

3 ♂. Tanangtalu, Ophir Districts, 1000 M.

♂, ♀. Rimbo Pengadang, Lebong, Bencoolen,
1000 M.

♀. Mt. Talamau, Ophir Districts, 500 M.

Iris sepia brown, bill and cere brownish black, feet greenish yellowbrown, claws dark grey.

Wings, ♂ 143, 137, 137, 145 ; ♀ 137, 138 mm.

The pale bands on the posterior mantle vary from buff to white and the markings of the underparts vary considerably also : in one male they are present everywhere except on the whitish area of the abdomen, in another they are confined to the extreme sides of the body and flanks.

All these birds were caught in snares in the secondary jungle.

Contents of stomach : vegetable matter and small pebbles.

5. *Rollulus roulroul* (Scop.).

R. & K., I, p. 100.

♂. Buo, Padang Highlands, 280 M.

2 ♂, ♀. Talu, Ophir Districts, 520 M.

♀. Bencoolen (no exact locality).

♂. Tapus, Bencoolen, 800 M.

Male : iris dark greyish brown, orbits and skin behind the eye crimson, upper mandible black, at the tomia coral red, lower mandible anterior part black, remainder coral red.

Female : iris as male, round the eye a ring of crimson papillæ, orbits brown, skin behind eye dark reddish brown,

bill entirely black (I did not notice any red at the base), feet coral red, claws blackish grey.

Wings, ♂ 138, 141, 139 ; ♀ 136, 137 mm.

6. *Excalfactoria chinensis chinensis* (Linn.).

R. & K., II, p. 75.

♂, 3 ♀. Muara Kiawai, Ophir Districts, 40 M.

Male : iris reddish brown, bill black, feet dark yellow, claws blackish grey.

In the female the upper mandible is brown and the lower one yellowish brown with a greenish hue and a brown tip.

Wings, ♂ 77 ; ♀ 63, 66, 70 mm.

The female No. 4760 (1st June) had a developed ovary.

The bird lives in grasslands and dry ricefields.

These specimens agree with birds from the Malay Peninsula.

7. *Houppifer inornatus* Salvad.

Acomus inornatus R. & K., I, p. 101, pl. IV.

♂, ♀. Mt. Talamau, Ophir Districts, 1000 M.

♂, 2 ♀. Tanangtalau, Ophir Districts, 1000 M.

2 ♂, 2 ♀. Sungei Kumbang, Korinchi Peak, 1400–1600 M.

2 ♂. Rimbo Pengadang, Bencoolen, 1000 M.

3 ♂, 2 ♀. Suban Ajam, Mt. Kaba, Bencoolen, 1200 M.

3 ♀. Air Njuruk, Mt. Dempu.

Male : iris sienna brown, orbital skin crimson lake, eyelids straw coloured, bill greenish horn, cere dirty black, feet and claws greenish grey.

Female : same as male only the feet and claws are of lighter colour.

Wings, ♂ 216, 216, 217, 213, 210, 224, 221, 217 ; ♀ 223, 213, 211, 195 imm., 212, 215, 213, 216, 202 mm.

The females vary considerably, agreeing in this respect with the series obtained by Robinson and Kloss (p. 102). In the three specimens from Mt. Dempu the yellowish-ochre centres to the feathers of the under surface are strongly developed, whereas those from the Ophir Districts (Tanangtalau and the Mt. Talamau) have these centres much less marked.

The bird keeps to the dense forest, where its loud note can be heard long before sunrise. It is very cautious and shy. I was able to shoot only a few, most of my specimens having been taken in snares.

The figure by Robinson and Kloss, p. 100, gives a wrong impression as far as regards the carriage of the tail, which in the living bird is held horizontally flat, and not spread out vertically.

Contents of stomach : big and small kernels of different fruit.

Females (14th and 18th May), had developed ovaries.

Lophura rufa (Raffles).

♂. Ophir Districts (no exact locality).

Iris brownish red, orbital skin bluish grey (Wedgwood blue), feet coral red.

The lateral shaft stripes are pure white in this specimen which is, therefore, typical *rufa*.

The bird lives in secondary jungle and in the primæval forest.

8. **Gallus ferrugineus ferrugineus** (Gm.).

♀. Air Njuruk, Mt. Dempu, Palembang, 1400 M.

♂, ♀ pull. Padang Highlands.

Wing 200 mm.

The chickens were reared from a cock and a hen, which lived a considerable time in captivity, but never grew quite tame. Some of the chickens lived to be full grown, but most of the hatches perished.

9. **Polyplectron chalcureum** Lesson.

Chalcureus chalcureus R. & K., I, p. 107.

6 ♂, 4 ♀. Tanangtalu, Ophir Districts.

♂, ♀. Mt. Talamau, Ophir Districts, 1000 M.

4 ♂, ♀. Sungei Kumbang, Korinchi Peak, 1400 M.

5 ♂, 2 ♀. Rimbo Pengadang, Bencoolen, 1000 M.

5 ♂, 1 ♀ mm., 1 ♀ pull. Suban Ajam, Mt. Kaba, Bencoolen, 1200 M.

Iris sepia, bill dull chocolate brown with a lighter tip, feet lead colour.

Wings, ♂ 170, 182, 181, 182, 172, 172, 175, 165, 175, 163, 166, 176, 172, 167, 164, 177, 170, 172, 161; ♀ 151, 160, 148, 148, 150, 165, 165, 155 mm.

Longest tail, ♂ 365; ♀ 210 mm.

This large series of thirty-one birds from different localities is fairly uniform throughout. The only difference which can be noted is that the black banding on the upper surface is variable. In all the specimens from Suban Ajam (Mt. Kaba) the markings are the least distinct, in

the series from Tanangtalu and Mt. Talamau they are the sharpest, those from the other localities are intermediate. The difference, however, is very small.

Difference in colour between the sexes is not noticeable except for the tails.

Description of ♀ chick : like the adult but the bars and vermiculations much finer. Top of head mixed with ochraceous, sides of head, throat and foreneck ochraceous.

The birds live in secondary and in primæval forest and are exceedingly shy and cautious. They are therefore seldom seen, although at an altitude from 1000–1400 M. they are very numerous. The opinion of Robinson and Kloss, that they are widely but not numerously distributed, is to be attributed to the fact, that these gentlemen when collecting in Sumatra made little or no use of snares, in which these birds can easily be caught in fair quantities. From the present series only two were shot, all the others were snared. In some of my stations we caught so many specimens, that I refrained from preserving all the skins. The flesh of this bird is rather tough.

Contents of stomach : very hard kernels and small pebbles.

Females, 12th May and 24th August, had developed ovaries.

10. *Argusianus argus argus* (Linn.).

♂, 6 ♀. Muara Sako, Indrapura, 300 M.

♂ imm., ♀. Mt. Ophir, 300 M.

Male and female : iris brownish grey, naked skin of head dark greyish blue, bill dirty white, cere blackish grey, claws dirty white.

Immature male : as above but the cere flesh-colour.

Contents of stomach : round seeds of very large diameter.

I doubt very much if the Peacock occurs in Sumatra. I was told over and over again by Europeans that they had seen or heard peacocks in Sumatra, but on closer investigation these so-called peacocks invariably proved to be Argus Pheasants. I am of opinion, that until an authentic specimen from Sumatra has been seen by an ornithologist *Pavo muticus* should not appear in a list of Sumatran species. Reports of laymen on this subject should be received with the utmost caution.

I have found the Argus Pheasant only in the outer range of the Barisan Mountains, the one nearest to the westcoast. There it is very abundant, which is proved by

the fact that within the course of six days I trapped seven birds at a single station. The Argus Pheasant is one of the most cautious and shy birds. There are very few people, even amongst the natives who frequent the forest, who have seen an Argus Pheasant running free. During all the years of my travels I only once saw an Argus, a hen, on the path from Muara Sako to Korinchi. The birds are easily trapped, especially in the mating season, if the snares are put round the well-known dancing places. In Minangkabau the dancing places are called *galanggang kuau* and in the Ophir Districts *sēsaren*. The hens are much more numerous than the cocks; it is therefore probable that a covey consists of one cock with several females.

I never saw any ill effect resulting from the consumption of the flesh of the Argus Pheasant, as has repeatedly been reported from Borneo and ascribed to the *Strichnos* fruits, which the birds seem to consume with impunity.

The Minangkabau name *kuau* is an exact imitation of the call of the male.

TURNICIDAE.

11. *Turnix pugnax* (Temm.).

♂. Buo, Padang Highlands, 280 M.

3 ♂, 4 ♀. Muara Kiawai, Ophir Districts, 40 M.

Male: iris cream coloured, upper mandible yellow with blackish grey tip; feet, claws greenish yellow, the articulations of the digits and the claws somewhat grey. (Of No. 3717 the feet were light yellow).

Female: iris cream coloured, bill yellow, tipped blackish, feet and claws same as male.

Wings, ♂ 75 subad., 78, 80, 83; ♀ 85, 86, 87, 87 mm.

These birds are more rufous above than the form occurring in the Malay Peninsula, *T. atrogularis* (Eyton) in which the females have a rufous collar and, apparently, a smaller extent of black on throat and foreneck. They may belong to the typical Javanese form of which we have no specimens.

As quail-fights with money wagers are in great favour with the Malays, the females are trapped in little cages with another female as decoy.

The general Minangkabau name is *puyuah*, but the natives distinguish two varieties: *puyuah bamban* and *puyuah bariang*. The latter is said to have more black on the throat and to possess a smaller bill. Both these names apply to the females as the males are no good for fighting and are of no interest to the natives.

TRERONIDAE.

12. *Butreron capellei capellei* (Temm.).

2 ♂, ♀. Muara Kiawai, Ophir Districts, 40 M.

Iris very light yellow, bill light green, cere blackish green, feet yellow, claws blackish grey.

Wings, ♂ 187 ; ♀ 182 mm.

Near the coast these pigeons are very numerous. The birds are easily shot at dawn when they are making for their roosting-trees, which they choose among those with dense foliage, and to which they return every night. Curiously enough these big birds are brought down with a very moderate charge, whereas the Imperial pigeons are exceedingly hard to kill.

13. *Sphenocercus oxyurus* (Reinw.).

R. & K., I, p. 105.

♂. Andalas, Tanjung, Padang Highlands, 720 M.

♀. Suban Ajam, Bencoolen, 1200 M.

Iris during life purplish blue with a purplish red outer ring. (Soon after death these colours fade to a creamy yellow); orbital skin partly light greenish yellow and partly light bluish green; bill grey, cere greenish blue, on the culmen turquoise blue; feet crimson, claws blackish grey.

Wings, ♂ 160 ; ♀ 152 mm.

14. *Treron vernans vernans* (Linn.).

Osmotreron vernans R. & K., I, p. 106.

♀. Pajokumbuh, Padang Highlands, 500 M.

♂. Aur, Kumanis, Padang Highlands, 200 M.

♂. Sandaran Agung, Korinchi, 733 M.

2 ♂. Pasir Ganting, Indrapura, sea level.

♂. Bencoolen, sea level.

Male: iris purplish red, fading soon after death to creamy yellow, bill pale bluish slate sometimes with a greenish shade, cere olive green, feet light purple, claws blackish grey.

Female: iris orange, bill, cere and feet as the male.

Wings, ♂ 139, 135, 140, 146, 139 ; ♀ 133 mm.

The female (February) had developed ovaries. These fruitpigeons are very common, especially near the coast, where they gathered sometimes in the evening in large flocks on their roosting trees.

15. *Ptilinopus roseicollis* (Wagl.).

R. & K., I, p. 106.

♂, 2 ♀. Mt. Dempu, Palembang, 2000 M.

Iris siennabrown, bill and cere dark olive green, feet light purplish red, claws blackish grey.

Wings, ♂ 146 ; ♀ 139 mm.

16. *Muscadivora aenea aenea* (Linn.).

♂, ♀. Talang Ampat, Bencoolen, 40 M.

Iris purplish red, eyelids red, orbital skin grey ; bill grey, cere purplish brown ; feet brownish purple with a red tinge.

Wings, ♂ 237 ; ♀ 227 mm.

17. *Muscadivora badia badia* (Raffles).

Carpophaga badia R. & K., I, p. 107.

♂. Tanangtalu, Ophir Districts, 1000 M.

♂. Air Gaung Ketjil, Mt. Dmepu, 1000 M.

♂. Mt. Talamau, Ophir Districts 1200 M.

♀. Bukit Sonsang, Solok, Padang Highlands, 900 M.

"Iris white to light grey, always with a dark grey outer ring, eyelids and orbital skin purplish crimson, bill purplish crimson, tip whitish horn, cere purplish maroon, feet brownish claret, claws dirty white."

Wings, ♂ 238, 238, 235 ; ♀ 228 mm.

The female (31st October), had a perfect egg in her oviduct.

The Minangkabau name is *pargam*, no distinction being made from *M. aenea*, whereas *Myristicivora bicolor* is called *rau*.

The birds live in pairs or small flocks of three to five individuals. The booming sound they emit is very characteristic. I found them at a lower limit than mentioned by Robinson and Kloss (p. 107), viz., about 3300 feet. They feed on very large fruits with big kernels, which they swallow entire.

COLUMBIDAE.

18. *Macropygia leptogrammica leptogrammica* (Temm.).

R. & K., I, p. 108.

♂. Koto Alam, Pajokumbuh, 320 M.

♂. Ulu Air, Pajokumbuh, 820 M.

Wings 173, 178 MM.

These birds are often offered for sale at Fort de Kock by natives and get very tame a few days after they have been trapped. They are very fond of cooked rice and breed freely in captivity. A clutch consists of a single egg and the nest is made of little twigs roughly piled together as is usual with pigeons.

19. *Macropygia ruficeps sumatrana* Robinson & Kloss.

Macropygia ruficeps nana R. & K., I, p. 109 ; *Macropygia ruficeps sumatranus*, R. & K., II, p. 77.

- 2 ♂. Fort de Kock, Padang Highlands, 920 M.
- 1 juv., not sexed. Andalas, Tanjung, Padang Highlands, 720 M.
- ♂ imm. Surian, Alahan Pandjung, Padang Highlands, 1050 M.
- 2 ♂, ♀. Balun, Muara Labu, Padang Highlands, 480 M.
- ♀. Lubok Sikaping, Padang Highlands, 440 M.
- ♂. Serapei, Korinchi, 800 M.
- 2 ♂. Rimbo Pengadang, Bencoolen, 1000 M.
- ♂, ♀. Suban Ajam, Bukit Kaba, Bencoolen, 1200 M.
- ♂, ♀. Pasemah, Palembang, 900 M.
- 3 ♂. Mt. Talamau, Ophir Districts, 1000–1500 M.

Iris white sometimes with a grey inner ring, immature birds have the iris entirely dark grey, eyelids dark slaty, bill and cere chocolate brown, feet purplish red (not strawberry red). Young birds have dull chocolate brown feet.

Wings, ♂ 140, 147, 145, 147, 141, 144, 142, 139, 144, 139 ; ♀ 140, 141 mm.

Contents of stomach : dry seeds, fruit seeds, and very small pebbles (grit).

The ♂ No. 1077 (11th June), was found in the primæval forest on the nest made of little twigs in a tree-fern (*Asplenium nidus*, L.), 2½ M. from the ground.

Young birds are much darker than adults and are barred with black throughout while the crown is brownish black. As the birds get older the barring diminishes, the crown becomes pale, the iridescent nuchal collar appears and there remain on the underparts only a few black markings on the breast.

PERISTERIDAE.

20. *Streptopelia chinensis tigrina* (Temm. & Knip).

R. & K., I, p. III ; R. & K., II, p. 78.

- ♂, 2 ♀. Fort de Kock, Padang Highlands, 920 M.
- ♀. Aur, Kumanis, Padang Highlands, 200 M.
- ♂. Sandaran Agung, Korinchi, 733 M.
- ♀. Suban Ajam, Bedjang, Bencoolen, 1200 M.
- ♂. Pasumah Estates, Mt. Dempu, Palembang, 900 M.

Iris pinkish orange, bill and cere black, feet purplish red, claws blackish.

Wings, ♂ 143, 141, 140 ; ♀ 139, 142, 143, 138 mm.

This bird is in great favour with the Malays as a cage-bird, and also they let them fight, putting money wagers on the birds. These fights are quite bloodless, as the opposing birds only beat each other with the wings: the one retreating first is the loser.

21. *Geopelia striata* (Linn.).

♀. Fort de Kock, Padang Highlands, 920 M.

This specimen is probably an escaped cagebird, as the home of the species is really the low country. It is the typical cagebird of the Malay and men when going for a walk often carry the bird in a flat cage with them. It is a much beloved sport of the natives to organize competitions for the bird with the most approved coo; sometimes large sums are backed on favorite birds. The natives distinguish a great variety of call-notes. They also believe that the bird protects the house against all evil influence especially against fire.

22. *Chalcophaps indica indica* (Linn.).

R. & K., I, p. 112.

♂. Fort de Kock, Padang Highlands, 920 M.

♀. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

Iris dark brown, bill lake red, cere brownish red, feet purplish red.

Wings, ♂ 146 ; ♀ 141 mm.

Minangkabau name *punai tanah*, which means ground-pigeon, because the bird feeds on the ground.

It is nowhere plentiful but widely distributed. It can often be seen flying swiftly through clearings in the wood; its low notes can be heard at great distance, and is difficult to locate.

RALLIDAE.

23. *Hypotaenidia striata* (Linn.).

R. & K., I, p. 114.

2♀. Koto Tengah, Salimpaung, Padang Highlands, 900 M.

♀. Bartagak, Sungei Puar, Padang Highlands, 1100 M.

♂. Balun, Muara Labu, Padang Highlands, 480 M.

♂. Sandaran Agung, Korinchi, 733 M.

Iris dark orange or light brown or carmine, the bill varies much in colour, orange red with yellowish brown tip and brown culmen, or pinkish red with dark brown tip and culmen, or brown with light purplish base and tip, or horn black with dirty dark red at the tomia, feet purplish lead, claws horn black.

Wings, ♂ 117, 108 ; ♀ 112, 106, 105 mm.

These birds are inseparable from a series from the Malay Peninsula, north to Bangkok. How all these compare with typical *striata* from the Philippines, or with Javanese birds (*gularis* Horsf.) we are unable to say ; but in view of the considerable individual variation very pronounced characters would apparently be necessary to distinguish races. In the Catalogue of Birds (Vol. xxiii, 1894). Sharpe was only able to recognise the Andaman birds as distinct (*obscuriora* Hume). No more recent review of the species seems to have been made.

All the females (January) had developed ovaries.

24. *Poliolimnas cinereus cinereus* (Vieill.).

R. & K., I, p. 114.

3 ♂, 2 ♀. Koto Tangah, Salimpaung, Padang Highlands, 900 M.

2 ♂. Sandaran Agung, Korinchi, 733 M.

Wings, ♂ 93, 93, 94, 95 ; ♀ 87, 90, 95 mm.

A female (January) had developed ovaries.

25. *Limnobaenus fuscus fuscus* (Linn.).

R. & K., I, p. 114.

♀. Koto Tangah, Selimpaung, Padang Highlands, 900 M.

♂, ♀. Talu, Ophir Districts, 520 M.

Iris and orbital ring carmine, bill black, feet pinkish coral red, claws black.

Wings, ♂ 96 ; ♀ 89, 91 mm.

The female (January) had developed ovaries.

26. *Porzana pusilla pusilla* (Pall.).

♂. Koto Tangah, Selimpaung, Padang Highlands, 900 M.

Iris dark orange, bill greenish black, the lower mandible with a yellow line in the middle, feet yellowish grey.

Wing 91 mm.

This species seems to be rare, as in four years only one example was obtained which is, so far as we are aware, the first to be recorded from Sumatra.

27. Amaurornis phoenicura javanica (Horsf.).

R. & K., I, p. 115 ; R. & K., II, p. 79.

♂. Singkarak, Padang Highlands, 400 M.

♀. Talu, Ophir Districts, 520 M.

♀, 2 imm. Lubuk Landur, Mt. Ophir, 200 M.

Iris dark carmine (in the immature female the iris was dark grey); bill sage green, blackish on culmen, shield blackish lake red (the immature bird had the bill greenish with blackish border on the upper mandible); feet yellowish brown with greenish tint.

Wings, ♂ 147 ; ♀ 132 mm., 138, 140 mm.

Contents of stomach : rice and small pebbles.

28. Gallinula chloropus orientalis Horsf.

R. & K., I, p. 116.

3 ♂, ♀ imm. Sandaran Agung, Korinchi, 733 M.

Iris dark grey, bill greenish yellow, basal part and shield brownish lake red, feet yellowish green, a garter of dull lake red above the tibio-tarsal joint.

Wings, ♂ 149, 152, 153 mm.

29. Porphyrio calvus calvus (Vieill.).

R. & K., I, p. 117.

7 ♂, 7 ♀ ad., 1 ♀ subad., 2 ♀ imm. Korinchi Lake, 733 M.

Iris dark brownish carmine, bill dark dirty lake red, culmen blackish red, shield dark dirty lake red, basal part of lower mandible blackish red, feet pale coral red, joints greyish black.

Wings, ♂ 222, 215, 228, 222, 231, 228, 216 ; ♀ 221, 221, 220, 220, 217, 221, 211 subad., 216 imm., 211 imm., mm.

We have now seen thirty-five of these birds; the above series taken in July and our own from the same place in May, and of the lot only one has a slight amount of greyish white on the head. Of five continental birds now before us all have a pale area on the head, some as much as the Sumatran specimen referred to, others considerably more ; the greyish feathers extending half way down the neck. They are also larger : of four specimens from Perak a ♂ and ♂ subad. have wings of 255 and 240 mm., a ♀ and ♀ subad., 245 and 240 mm., and a male from Chainat north of Bangkok, wing 247 mm. These birds will have to be known as *Porphyrio calvus viridis* Begbie. (The Malayan Peninsula, 1834, p. 515, Malay Peninsula), and since

Porphysio edwardsi Elliot (Stray Feathers VII, 1878, p. 23, plate), is based on birds from Saigon and Bangkok and Hume identifies with them a specimen from Selangor (S. F. IX, 1880, p. 121), that name must apparently stand as a synonym.

The Purple Coot has been reported as occurring also at Pariaman in the Padang Lowlands ; having seen, however, no specimen from that locality, it is uncertain whether we have to do here with the same species or with *P. bemmeleni* Buttik.

One adult female had developed ovaries, also one of the birds which is, judged by the plumage, still immature.

Immature birds are tinged with brown above, are without the bright blue area on the breast and throat, while the feathers of the underparts are greyish violet tipped with whitish.

30. *Gallicrex cinerea* (Gm.).

♀. Bartagak, Puar, Padang Highlands, 1100 M.

Iris brownish grey, upper mandible brownish green with a yellow tint, lower mandible light yellow, shield brownish yellow, feet as upper mandible. According to Robinson and Kloss (I, p. 283) there seems to have been no authentic record of the occurrence of this species in Sumatra. Since the above mentioned specimen was obtained I saw another example in a small swamp near Aur, Kumanis, Padang Highlands, 200 M., but did not succeed in shooting it.

CHARADRIIDAE.

31. *Charadrius apricarius fulvus* (Gm.).

♀. Pangkalan Koto Bharu, Pajokumbuh, Padang Highlands, 120 M.

Iris dark brown, bill black, feet greyish black.

Wing 155 mm.

32. *Tringoides hypoleucus* (Linn.).

♂, 4 ♀. Fort de Kock, Padang Highlands, 920 M.

♂, ♀. Pangkalan Koto Baharu, Pajokumbuh, 120 M.

♀. Pasir Ganting, Indrapura.

Iris sepia brown ; bill black, base of lower mandible brownish black, feet greenish grey, claws black.

Wings, ♂ 106, 107 ; ♀ 102, 108, 109, 106, 109, 114 mm.

This species is migratory.

33. *Rhyacophilus glareola* (Gm.).

R. & K., I, p. 113.

5 ♂, 8 ♀. Fort de Kock, Padang Highlands, 920 M.

Iris brown; bill black, base dark olive green; feet yellowish olive, claws black.

Wings, ♂ 128, 130, 125, 127, 125; ♀ 126, 124, 130, 124, 125, 120, 125, 120 mm.

A migratory species.

34. *Gallinago stenura* (Kuhl.).

♂. Fort de Kock, Padang Highlands, 920 M.
April 13th.

Iris brown, bill light sepia, tip black, feet light brownish grey.

Wing 127 mm.

Migratory species.

35. *Scolopax saturata saturata* Horsf.

R. & K., I, p. 112.

♂, 3 ♀. Sungei Kumbang, Korinchi, 1400 M.

Iris bill, and feet sepia brown.

Wings, ♂ 146; ♀ 147, 146, 146 mm.

This woodcock frequents dark places in the dense forest and is always met with in pairs. When disturbed, the bird will usually run for a short distance and then stand quite motionless, trusting to the strong resemblance it bears to its surroundings to escape detection. Once I stood looking for quite a time for a woodcock, which I had seen running away before my feet, till its presence was revealed to me by its large protuding eyes, shining like black beads. It stood in a dark place between some dried sticks, quite exposed at a distance of hardly three yards.

The birds take to flight at the very last moment, as snipe do, and take to cover at a very short distance again. The sexes call or warn each-other by a rattling sound repeated several times and sounding like : krrr-krrr-krrr.

I might mention, that I did not find the bird on Mt. Talamau (Mt. Ophir), on Mt. Kaba or on Mt. Dempu, which is, it is true, no proof of its absence there, but as I explored these localities very thoroughly the probability is very great that it does occur.

36. *Rostratula benghalensis benghalensis* (Linn.).

♀. Bulun, Muara Labu, Padang Highlands,
480 M. April 14th.

Bill pinkish brown, feet greenish pearl grey.

Wing 130 mm.

The specimen had developed ovaries, which corroborates the well-known fact, that the species breeds in this country.

ARDEIDAE.

37. *Pyrrherodias purpurea manillensis* (Gm.).

Phoyx purpurea manillensis R. & K., I, p. 119.

♂. Buo, Padang Highlands, 280 M.

♂ subad. Sandaran Agung, Korinchi Lake, 733 M.

Iris yellow, bill brownish yellow, culmen light sepia brown, feet black in front, dull yellow behind (adult).

Wings 375, 340 mm. ; tarsus 130, 125 mm.

This species breeds in the Padang Highlands, where I saw several breeding places, e.g., near Aur, Kumanis, and another near Pajokumbuh, where they bred in company with a kind of white heron (*Herodias alba* or *Bubulcus coromandus*). A large number of nests were made on a big durian-tree. While I was standing beneath the tree a *Spizaetus limnaetus* dashed on one of the nests and before I had recovered from my surprise and was able to fire, it flew away with a young heron in its claws. The whole colony was in great uproar and made a tremendous noise, but none of the birds dared to attack the *Spizaetus*.

Half an hour later the bird of prey returned and fetched another nestling.

38. *Mesophoyx intermedia intermedia* (Hasselt).

R. & K., I, p. 119.

♂, ♀. Buo, Padang Highlands, 280 M. February.

♂, ♀. Fort de Kock, Padang Highlands, 920 M.
April, May.

♂. Korinchi Lake, Padang Highlands, 733 M.
July.

Iris light sulphur yellow, orbital skin sulphur yellow, bill yellow, tip black above, blackish yellow below, feet and claws black. The ♂ No. 3648 had greyish black feet.

Wings, ♂ 295, 295, 308 ; ♀ 285, 285 mm., tarsus ♂ 112, 110, 110 ; ♀ 108, 100 mm.

This species is migratory.

39. *Demiegretta sacra sacra* (Gm.).

2 ♀. Painan, Padang Lowlands.

Bill sepia brown, feet black in front, yellowish green behind, soles dull yellow.

Wings 270, 255 mm.

The smaller immature (?) bird had the upper mandible blackish brown and the lower dull sepia brown. The

plumage is dull dark brown washed on crown, wings and tail with slaty.

The birds were nesting on dry coral reefs quite near to the shore. The colonies consisted for the greater part of birds of the black variety, mixed with a few of the white ones.

40. *Gorsachius melanolophus melanolophus* (Raffles).

♂. Fort de Kock, Padang Highlands, 920 M.

♂. Aur, Kumanis, Padang, Highlands, 200 M.

Iris light greyish yellow, with an inner ring of lemon, upper mandible horn black with yellow tomium, lower mandible greenish yellow, feet greenish yellow.

Wings 260, 265 mm.

41. *Butorides striatus javanicus* (Horsf.).

♂. Pangkalan Koto Baharu, Pajokumbuk, Padang Highlands, 120 M.

Iris lemon, upper mandible black, lower mandible yellowish black, with yellow tip, feet blackish yellow in front, greenish yellow behind, claws greyish black.

Wing 180 mm.

42. *Bubulcus ibis coromandus* (Bodd.).

3 ♂, 2 ♀, ♀ imm. Fort de Kock, Padang Highlands, 920 M.

♂. Pajokumbuh, Padang Highlands, 500 M.

2 ♀. Baso, Agam, Padang Highlands, 900 M.

Iris sulphur yellow, orbital skin in the males very light lavender, in the females dark yellow, bill dark yellow, femur yellowish black, tibia and tarsi greyish black, claws black; in some specimens the tibia and tarsi are of a lighter yellowish grey.

Wings, ♂ 247, 245, 245, 240; ♀ 240, 240, 237, 235, 228 mm.

All these birds (March–May) have the rufous plumes except the young female.

Two females (2nd May) had developed ovaries.

The Cattle Egret is migratory and in the Padang Highlands a very common bird in March, April and May, when it is met with in large flocks.

43. *Ardetta sinensis sinensis* (Gm.).

R. & K., I, p. 120.

♀. Danau di Atas, Alahan Pandjang, Padang Highlands, 1530 M.

2 ♂, ♀. Korinchi Lake, 733 M.

♀. Fort de Kock, Padang Highlands, 920 M.

Iris and cere light lemon, orbital skin sulphur yellow with a light sepia stripe, upper mandible and culmen blackish sepia with pearly yellow tomium, lower mandible pearly yellow with brownish tomium, feet greenish yellow in front, lemon behind, claws blackish brown, soles lemon.

Wings, ♂ 121, 129 ; ♀ 120, 121, 127 mm.

Females (July and August), had developed ovaries.

44. *Ardetta cinnamomea* (Gm.).

R. & K., I, p. 120.

♂. Fort de Kock, Padang Highlands, 920 M.

♂. Sandaran Agung, Korinchi Lake, 733 M.

Iris light yellow, upper mandible blackish sepia with yellow tomium, lower mandible dull yellowish with light brownish base, feet light yellowish green.

Wings 131 140 mm.

ANATIDAE.

45. *Nettopus coromandelianus* (Gm.).

♂. Korinchi Lake, 733. M.

Iris carmine, bill black, feet brownish yellow with a greenish tint, joints blackish, webs black.

Wing 163 mm.

This bird was one of a small flock on the lake. The birds were very shy and difficult to approach ; after being hit the bird dived down in the water, and tried to hide between the submersed waterplants *. The natives living round the lake did not know this species of duck, which proves, that it is not a common visitor there.

46. *Dendrocygna javanica javanica* (Horsf.).

♂, ♀. Aur, Kumanis, Padang Highlands, 200 M.
(March).

♂. Palembang town (swamps), S. E. Sumatra.
(September).

Iris dark brown, orbital ring yellow, bill dark slate grey, tip black, lower mandible brownish black, feet dark slate grey.

Wings, ♂ 181, 189 ; ♀ 187 mm.

47. *Dendrocygna javanica arcuata* (Horsf.).

♂, ♀. Palembang town (swamps), S. E. Sumatra.
(September).

Iris dark brown, no yellow orbital ring, bill black, feet slate coloured.

Wings, ♂ 202 ; ♀ 201 mm.

* *Dendrocygna* never dives.

These specimens prove, that *D. arcuata* is also found in Sumatra and that its limit of distribution runs more to the west than supposed by Robinson and Kloss (I, p. 118).

In the swamps round Palembang it is caught in large quantities and brought there to the market for consumption together with *D. javanica*.

The two species are easily recognisable. Besides the difference in the upper tail coverts, pointed out by Robinson and Kloss, the following may be noted.

D. javanica :—Orbital ring yellow, the brownish black on the top of the head does not descend the neck, no blackish marks on the under side.

D. arcuata :—No yellow orbital ring, the black on the top of the head is much darker and runs down the neck to the mantle, the feathers on the upper side are bordered with ochraceous, whereas in *D. javanica* they are more grayish brown and far less marked. Breast and lower abdomen and a narrow median stripe, between with faint blackish spots.

I once kept a number of *D. arcuata* together with a single *D. javanica*, all from Palembang; the latter was never allowed to mix with the flock and ultimately died of ill treatment by its fellow captives.

48. *Anas superciliosa* (Gm.).

R. & K., I, p. 118.

3 ♂. Danau di Atas, Alahan Pandjang, Padang Highlands, 1530 M. (August).

7 ♂, 4 ♀, 6 unsexed. Lake Korinchi, 733 M. (July).

Iris brown upper mandible slate grey, tip black, lower mandible slate grey, tip and base black, feet greyish brown with a yellow tint.

Wings, ♂ 232, 240, 242, 242, 243, 244, 246; ♀ 225, 230, 235, 235, 237, 244, 250; unsexed specimens 230, 238, 243, 244, 251, 256 mm.

When I was in Korinchi in the month of July the ducks were present on the lake in very large flocks, some of them numbering up to fifty or sixty birds. Rowing round the border of the lake nearly in every creek one or more flocks were to be found. If driven away, they generally moved to the centre of the lake or else to some distant creek.

A. superciliosa is also to be found on the Danau Bento, the big swamp in the north of Korinchi, and further in the Padang Highlands on the two lakes near Alahan Pandjang, the Danau di Atas and the Danau di Baruh. The natives in the last named locality told me, that the ducks used to

breed every year in the dense ferns (*Gleichenia*) round the lake. The eggs are collected by the natives and hatched under tame ducks. These domesticated *A. superciliosa* freely mate with the common duck, and the offspring can hardly be told from the wild parents. By the natives round the Lake of Singkarak in the Padang Highlands, I was told that the *ondan* was seen there occasionally in the wet seasons (April-May and October-December), but I did not observe it there myself.

PHALACROCORACIDAE.

49. *Phalacrocorax carbo* (Linn.).

♀, 2 ♀ imm. Lake of Singkarak, Padang Highlands, 400 M.

Iris sea green ; orbital skin and gular pouch dark yellow ; upper mandible brownish black, tip and tomium pinkish horn with a blackish tint ; lower mandible pinkish horn, tip blackish ; feet black. The immature birds have the bill pinkish horn with the culmen brownish black and the tip whitish.

Wings 327, 318, 308 mm.

The immature birds are in advanced first plumage with a considerable amount of brown on foreneck and breast.

Several races of this cormorant are now recognised : our birds are probably *sinensis* (Shaw and Nodder) from China ; but for lack of comparative material we cannot determine them subspecifically.

According to the natives and some European sportsmen, cormorants used to be fairly numerous on the Lake of Singkarak, but they have been destroyed and driven away. When I visited the lake in June 1914, I found near the southern extremity a family of four, consisting of a full grown pair and two young birds. The natives told me, that the cormorants used to nest on some coconut-trees at the village of Panjenggahan, near the western border of the lake, and there also they roosted at night. I succeeded in shooting two of them on the lake, the remaining two were killed by a native while they were roosting on the above mentioned spot. One of the old birds tumbled into the lake and was lost. Later on I heard that there were no more cormorants to be found on the lake, so I fear I have killed the last survivors of the colony. On the Danau di Atas near Alahan Pandjang, and on the Lake of Korinchi cormorants are seen occasionally, but they never stop there for long. It seems, therefore, that the birds visit the Padang Highlands and Korinchi on their migration from some other lake in Sumatra, or from an island in the Straits of Malacca.

FALCONIDAE.

50. *Lophospizias trivirgatus trivirgatus* (Temm.).

2 ♂. Rimbo Pengadang, Lebong, Bencoolen,
1000 M.

Iris chrome, upper mandible horn black, lower mandible dirty white, cere greenish yellow, feet lemon, claws black.

Wings 199, 204 mm.

51. *Astur soloensis soloensis* (Lath.).

♂ subad. Fort de Kock, Padang Highlands, 920 M.

Iris sepia brown ; bill black, base paler, cere orange ; feet orange, claws black.

Wing 185 mm.

52. *Accipiter virgatus virgatus* (Temm.).

R. & K., I, p. 120.

♂ imm. Rimbo Pengadang, Lebong, Bencoolen,
1000 M. [No. 298].

♂ imm. Tanangtalu, Padang Highlands, 1000 M.
[No. 4555].

♀ subad. Andalas, Tandjung, Padang Highlands,
720 M. [No. 4058].

Iris lemon, upper mandible black, blackish at the tomium, lower mandible blackish, tip black, cere blackish yellow, feet yellow, claws black (No. 298).

Iris greyish yellow, bill black, cere brownish yellow with a greenish hue, feet greenish yellow, soles yellow, claws black (No. 4555).

Iris yellow ; bill black, cere orange ; feet yellow, claws black (No. 4058).

Wings, ♂ 146, 144 ; ♀ 177 mm.

Both males have the feathers of the upper surface edged with rufous and the napes largely rufous : the underparts are longitudinally striped with brownish black.

In the female the crown and nape are slaty black and the remaining upperparts are just beginning to assume a slaty tinge. Abdomen and thighs are barred rufous and white : the breast is rufous with a few white patches and faint blackish stripes.

53. *Spilornis cheela bassus* (Forst.).

Spilornis bacha pallidus R. & K., I, p. 122 ; R. & K., II, p. 81.

♂. Buo, Padang Highlands, 280 M.

5 ♂, ♀. Aur, Kumanis, Padang Highlands, 200 M.

♀ imm. Rimbo Pengadang, Lebong, Bencoolen,
1000 M.

juv. unsexed. Andalas, Tanjung, Padang Highlands, 720 M.

Iris light chrome, bill bluish slate, culmen blackish, some examples (No. 4081 and 4457) with horn black tip, cere and orbital skin lemon, feet dirty pale yellow, claws black.

Wings, ♂ 350, 350, 352, 355, 360, 380 ; ♀ 365 mm.

The Serpent Eagle preys not only on reptiles, his principal food, but according to natives occasionally also seizes a hen.

54. *Haliastur indus intermedius* Gurney.

R. & K., I, p. 123.

♂. Buo, Padang Highlands, 280 M.

♀. Aur, Kumanis, Padang Highlands, 200 M.

Iris brownish yellow, bill horn yellow, lower mandible at the base slightly blackish, cere and feet pale yellow, claws black.

Wings, ♂ 380 ; ♀ 412 mm.

55. *Elanus coeruleus hypoleucus* Gould.

R. & K., I, p. 123.

♂. Sandaran Agung, Korinchi, 733 M.

♀. Koto Tuo, Mt. Singgalang, Padang Highlands, 1000 M.

♀. Fort de Kock, Padang Highlands, 920 M.

♀ imm. Buo, Padang Highlands, 280.

Iris crimson, bill black, cere pale yellow, sometimes dirty pale yellow, feet lemon, claws black. The immature bird has the iris orange.

Wings, ♂ 295 ; ♀ 295, 292, 280 mm.

The young bird has the dark part of the wing brownish black and the upper parts, wings and tail mingled brown and grey.

Very abundant in the Padang Highlands. I doubt very much the statement that the bird ever preys on other birds, at least I never found anything else in the stomach of killed birds than small reptiles, frogs and grasshoppers.

56. *Pernis apivorus orientalis* Tacz.

♀. Buo, Padang Highlands, 280 M., 26th Feb., 1914, No. 3686.

Iris pale yellow, upper mandible black, lower mandible brownish black, tip black, cere black, feet yellow, claws black.

Contents of stomach big wasps and their larvae and chrysalides.

Wing 450 mm.

This specimen, except for the bars on the tail, is blackish-brown throughout, slightly darker on head and sides of neck : it is crestless. Except for size it can be exactly matched by an unsexed example from Kuala Lumpur with a wing of 415 mm. It is the largest specimen we have seen, no other bird in our considerable Malaysian series having so long a wing, the range being (twenty examples) 403–432 mm.

It undoubtedly represents the East Siberian form *Pernis apivorus orientalis* Taczanowski (Faune Orn. Sib. Or. I, 1891, p. 50), which Stresemann states visits the Sunda Islands in winter.

57. *Pernis apivorus ptilorhynchus* (Temm.).

♂. Rimbo Pengadang, Lebong, Bencoolen, 1000 M., 17th June, 1916, No. 232.

♂. Suban Ajam, Redjang, Bencoolen, 1200 M., 21st July, 1916, No. 540.

Iris golden yellow, upper mandible horn black, lower mandible dirty white, tip blackish, cere black, feet chrome, claws black.

Contents of stomach : chrysalides of bees.

Wings, 405, 416 mm.

Measurements in the flesh.—♂ No. 232, total length 588, tail 275, wing 416, bill from gape 40, ts. 50 mm.

Both these birds have well-developed crests. The second is in the phase named *Pernis tweeddalei* by Hume (cf. plate, Stray Feathers, X, 1887, p. 513): the other is younger and not so dark, with shaft stripes on the breast, the abdomen barred white and brownish rufous and a brownish rufous collar.

We have little doubt that the various forms of honey-buzzard are only geographical races of *P. apivorus*, the northern subspecies being crestless while the southern ones develop a crest.

58. *Microhierax fringillarius* (Drap.).

R. & K., I, p. 124.

2 ♂. Fort de Kock, Padang Highlands, 920 M.

♂. Kamang, Agam, Padang Highlands, 880 M.

♂, 3 ♀, ♂ imm., ♀ imm. Andalas, Tandjung, Padang Highlands, 720 M.

2 ♀. Tanangtal, Ophir Districts, 1000 M.

♂. Talang Ampat, Bencoolen, 40 M.

2 ♂, ♂ imm., ♀ imm. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

Iris dark brown, bill and cere black, feet and claws black.

Immature birds have the bill rosy horn to yellowish horn, with more or less blackish culmen, feet bluish slate, claws blackish.

Wings, ♂ 97, 95, 95, 93, 92, 92, 100, 96 imm., 90 imm. ;
♀ 104, 100, 100, 96, 98 imm., 96 imm.

Adult females are considerably larger than males and it is possible that mistakes have been made in the sexes of two examples.

Young birds differ from adults in having the abdomen much paler tawny ; but the forehead, patches on the sides of the head and neck and the checks tawny instead of white : also in the colour of the bill and feet.

The Minangkabau name, *sikok bondo*, means Munia-hawk, because *Microhierax* preys on *Munia maja* and other species of *Munia*, especially on the young birds. It also feeds on dragonflies and other flying insects.

The Pygmy Hawk is very common and frequents open country, clearings, gardens, and plantations, where it is usually seen sitting on a prominent bough or dead branch whence it can overlook its surroundings. The bird continually nods its head, when it is on the look-out. From its perch it sallies out to catch an insect on the wing, returning to the same spot to devour it. The species is never met in the forest.

Of the specimens from Andalas, an adult male and female and the two young birds belonged to a family of six, all sitting on the same bough. I brought down the two parents and two of the young, but the others escaped. After each discharge the birds flew off, returning shortly to the same spot.

59. *Spizaetus cirrhatus limnaetus* (Horsf.).

R. & K., II, p. 81.

♀ imm. Biaro, Agam, Padang Highlands, 900 M.

2 ♂. Buo, Padang Highlands, 280 M.

♂, ♀. Aur, Kimanis, Padang Highlands, 200 M.

♂, ♀. Fort de Kock, Padang Highlands, 920 M.

Male : iris yellow, bill black, cere black or blackish, feet pale yellow, sometimes of a dirty hue, claws black.

Females have the iris more yellowish brown, and the immature birds dark grayish brown, yellowish brown, or grayish yellow.

Wings, ♂ 385, 381, 388 ; ♀ 425, 410 mm.

All are in the dark brown phase except the male from Fort de Kock, which has the head and rump pale and all the underparts white, the thighs showing faint rufous bars.

Minangkabau name *alang pungguë*.

This species is very common in the Padang Highlands, where the dark form (*Sp. limnaetus* Horsf.) is much more numerous than the light one (*Sp. caligatus*, Raffles). Both these forms belong to one and the same species; the colour having nothing to do with age or sex. The white breasted birds remain white during all their life, and the dark ones are so from their youth. I have often seen pairs of which one was white and the other dark, the offspring being either light or dark; therefore no colourblending seems to take place. More usually both sexes are dark, and only once, at Buo, I saw a pair of white birds. The dark Biaro bird is the young of a white female, which was shot on the nest, and a dark male. As the latter did not return to the nest, the nestling, which was the sole occupant and still clad in white down, was removed on the 16th October, 1913. After having lost its down, it at once assumed a dark coat. It grew quite tame and was fed on raw meat. It had to be killed on the 25th December, 1913, being not yet three month old, for when it was taken from the nest it could not have been more than a week old. Except for the colour of the eyes it could hardly be told from an adult bird of the dark form.

The nest from which it was taken was made in a rather low tree, not more than 20 M., in a village garden. It was constructed of boughs, lined with a thick layer of decayed leaves and some hen's feathers.

I once saw a family composed of one light breasted bird and three black ones, apparently a couple with two young. Some days in succession they came to the same big tree in the vicinity of my dwelling. I only secured one of the dark birds.

That sometimes two young are reared at the same time is also born out by my following experience. At Buo, I observed on the 4th March, 1914, two dark birds in a plantation, and succeeded in shooting one of them. The other flew away to a short distance, but after some time came back all the while calling for its companion, uttering a piteful sound. I hunted it round the village but it constantly returned to the spot where it had last seen its mate. After half an hour's chase I managed to bring down also the second bird. Of course, I thought that it was a couple, but to my surprise they both turned out to be young males (specimens from Buo). I can explain the touching attachment which the surviving bird showed towards its companion only by supposing that they came from the same nest.

The Aur pair are an adult female and a young (?) male which was flying in company, either her mate or her young. The female is of considerably larger size.

That the white-breasted male is an immature bird, was clearly shown by the colour of its eyes and by the soft yellowish gape.

My series of specimens and my personal observations, comprising a large number of cases, prove beyond any doubt that, as said above, both colour variations have no specific value and are neither an indication of age or sex. *Sp. limnaetus* is of all the birds of prey in Sumatra the greatest robber of poultry and surpasses in this respect *Haliastur intermedius* which, besides live birds, feeds also on fish, carrion, and animal refuse. The true Falcons also feed exclusively on birds and small mammals, but they are such rare visitors to Sumatra, that their depredations are insignificant in comparison with those of *Sp. limnaetus*. I am ignorant as to whether the latter also feeds on small mammals and reptiles. Although *Sp. limnaetus* is a common bird everywhere in the Padang Highlands, I have observed nowhere so many of them as in the country round Buo and Aur; where they are a great nuisance to poultry raising. The birds are often to be seen in gardens and plantations in the villages, or circling, mostly in pairs, high in the air on the look-out for some prey. Their shrill call-note is a familiar sound in the Padang Highlands.

The birds are not shy at all, and although they show great circumspection, they seem not to realize always the danger that threatens them from a gun, and are therefore not difficult to approach. In this respect they are far inferior in cunning to crows.

60. *Spizaetus alboniger* Blyth.

♂. Rimbo Pengadang, Lebong, Bencoolen,
1000 M.

Iris lemon, bill horn black, cere blackish, feet pale yellow, claws blackish.

Measurements in the flesh.—♂ total length, 585, t. 267, w. 350, bill from gape, 40, ts. 78 mm.

The specimen is in immature plumage; brown above, salmon-buff below, breast with a few dark spots and flanks and legs with dark cross bars.

This bird attains a larger size than is generally recorded: we have seen an adult female from N. E. Sumatra with a wing of 365 mm.

PANDIONIDAE.

61. *Pandion haliaetus* (Linn.).

♀. Korinchi Lake, 733 M.

Iris yellow ; bill black, cere bluish slate ; feet white with a sea-green tinge (yellow in the dry skin), claws black.

Wing 470 mm.

Stomach contained fish.

62. *Polioaetus humilis humilis* (Müll. & Schleg.).

♀ juv. Rimbo Pengadang, Lebong, Bencoolen,
1000 M. [No. 331].

Iris dark yellowish brown, bill horn black, cere blackish, feet white with a sea-green tint, claws horn black.

Measurements in the flesh.—T. l. 470 ; t. 161 ; w. 282 ; bill from gape 42, ts. 66 mm.

This young bird was taken from the nest by a native. It closely resembles the young Sumatran male figured by Müller and Schlegel in the "Verhandeligen," Tab. 6, but the crown and nape are mingled brown and white and the feathers of mantle and wing-coverts have broad pale edges. The rectrices are pointed and tipped with white and have remnants of down attached.

BUBONIDAE.

63. *Ketupa ketupu ketupu* (Horsf.).

♂ imm., ♀. Fort de Koek, Padang Highlands,
920 M.

2♂. Buo, Padang Highlands, 280 M.

2♂, 2♀. Aur, Kumanis, Padang Highlands, 200 M.

♂. Andalas, Tandjung, Padang Highlands, 720 M.

♂. Singkarak, Padang Highlands, 400 M.

♀ juv. Balan, Muara Labu, Padang Highlands,
480 M.

Iris lemon, bill blackish, the base of the lower mandible lighter, cere dingy yellowish grey, feet yellowish grey, claws black or blackish.

Wings, ♂ 316, 333, 335, 338, 345 ; ♀ 325, 332, 334, 338 mm.

Except for the flight feathers and tail which are as in adults, the nestling is bright tawny throughout with dark brown shaft stripes.

The Fishing Owl is extremely common in the Padang Highlands. Its food consists of small mammals, birds, and fish. To owners of fishponds it causes much loss. It usually lays a single egg in the cuplike hollow formed by the leaves of the big arboreal fern *Asplenium nidus* (Linn.). No nest-material whatever is used,

The egg is nearly globular and of a dirty white colour. One of the Buo birds (No. 3735) was caught on its nest with the aid of a snare.

The bird utters at night a call which sounds like "tuk-tuk-tuk-tuk-tuk" repeated in quick succession.

64. *Huhua sumatrana sumatrana* (Raffles).

R. & K., I, p. 124.

♂, ♀. Taluk, Buo, Padang Highlands, 240 M.

♂. Aur, Kumanis, Padang Highlands, 200 M.

♂ imm. Fort de Kock, Padang Highlands, 920 M.

♀, ♂ juv., adult unsexed, juv. unsexed. Andalas, Tanjung, Padang Highlands, 720 M.

♂ juv. Kubu Krambil, Batipuh, Padang Highlands, 600 M.

♂. Baso, Agam, Padang Highlands.

Iris sepia brown or yellow, bill wax yellow, cere pale yellow, sometimes with a greenish cast, feet pale yellowish grey, claws black.

The immature birds have a brown iris, bill, cere and feet are lighter in colour than in the adults, claws black.

Wings, ♂ 330, 345, 351; ♀ 346, 350; unsexed adult, 326 mm.

Young birds are white, banded with brown. The adult colour first appears with the flight feathers of the wings and the rectrices, next on the rump.

This owl is always met in pairs and is not uncommon, but less numerous than *Ketupa ketupa*; it has the same nesting habit as the latter species, choosing for its laying place the fern *Asplenium nidus* (Linn.) and using no nest material. I saw three of these nests, containing a single nestling each. Natives assured me, that this owl sometimes rears two young at a time, but I very much doubt this statement. These owls feed on birds and small mammals, especially rats.

Strix orientalis Horsf., being preoccupied by *Strix orientalis* Shaw, the species must bear Raffles' name and the Java bird if distinct will be *Huhua sumatrana strepitans* (Temm.). The Banka Id. bird (*minor* Schlegel) does not seem to differ from the Sumatran one.

65. *Otus bakkamoena lempiji* (Horsf.).

Pisorhina lempiji R & K., I, p. 125.

3 ♂, 2 ♀. Fort de Kock, Padang Highlands, 920 M.

♀. Buo, Padang Highlands, 280 M.

♂ juv. Padang Town

Iris dark brown, bill dark brownish yellow, lower mandible lighter, cere brownish yellow, feet yellowish grey.

Wings, ♂ 145, 151 ; ♀ 147, 148, 148, 149 mm.

The Minangkabau name, *kuas tjirit ayam*, means "fowl's excrement-owl," for the natives in Sumatra, like those in Java, believe that it feeds on the droppings of fowls, which is not the case, as it devours insects and their larvae ; it is especially fond of all kinds of *Lamellicornis*. In captivity it takes raw meat, but does not thrive on it. The erroneous belief of the natives is perhaps to be explained by the fact, that during the dark it flies along the ground, preying on the beetles who feed on the dung of the poultry. At night its dismal call sounding like "huk" is heard in the foliage of the trees, even in the most populous places, and is regarded by superstitious people as an ill omen. If two birds call each other the pitch of the two notes is not the same, but I do not know whether the male or the female utters the higher note.

Two females (January) had developed ovaries.

All the specimens were obtained in villages.

66. *Otus solokensis solokensis* (Hartert).

Pisorhina solokensis R. & K., I, p. 125.

♂. Sungei Kumbang, Korinchi, 1400 M. [No. 5038].

♂. Suban Ajam, Redjang, Bencoolen, 1200 M. [No. 419].

Iris chrome, upper mandible greyish yellow, tip and tomium blackish, lower mandible blackish, tip transparent horn yellow, feet pinkish cream, claws horn white, tips black.

Wings 164, 158 imperfect.

Contents of stomach : insects and a frog.

Both specimens were shot in dense forest.

67. *Ninox scutulata scutulata* Raffles.

♂. Aur, Kumanis, Padang Highlands, 200 M.

♀. Fort de Kock, Padang Highlands, 920 M.

Iris lemon, bill blackish slate, culmen and a median stripe along the lower mandible horn yellowish white, cere blackish slate, feet yellowish grey, claws blackish.

Wings, ♂ 201 ; ♀ 218 mm.

68. *Glaucidium brodiei sylvaticum* (Bp.).

♂. Air Njuruk, Mt. Dempo, Palembang, 1400 M. [No. 559].

Iris lemon, bill and cere greenish yellow, feet greenish yellow, claws blackish.

Shot in dense forest.

Measurements in the flesh.—♂ Total length 167, tail 60, wing 98, bill from gape 18 tarsus 15 mm.

A very rare species of which but few specimens are known.

69. *Photodilus badius badius* (Horsf.).

♂. Mt. Talamau, Ophir Districts, 1000 M.

Iris dark greyish brown, bill and cere pinkish white horn, feet pinkish white, claws very pale sepia brown.

Measurements in the flesh.—♂ Total length 264, tail 81, wing 189, bill from gape 33, tarsus 36.5 mm.

Shot in dense forest.

Contents of stomach : grasshoppers.

PSITTACIDAE.

70. *Conurus longicauda* (Bodd.).

♂. Sungei Kujung, Indrapura.

♂, ♀. Bencoolen Town.

Male : iris creamy white, upper mandible lake red, tip whitish horn, lower mandible blackish brown, feet yellowish olive, claws blackish.

The female has the entire bill blackish brown with lighter tip.

Wings, ♂ 151, 145 ; ♀ 149 mm.

These birds are migratory. They fly usually in flocks of ten to thirty birds and like to perch on high dead tree-trunks and are only found at a low altitude, by preference in swampy level country. They feed on various tree fruits and cause much damage in eating the young shoots and leaves of the coconut palms. The bill of captured birds is usually covered by a brownish substance, being the dried up sap of the fruits they feed on.

71. *Psittinus cyanurus cyanurus* (Forst.).

4♂, 3♀. Muara Kiawai, Ophir Districts, 40 M.

♂. Sukamananti, Ophir Districts, 200 M.

Male : iris very pale yellow, upper mandible lake-red, tip yellowish white horn, lower mandible dingy blackish brown, feet dingy brownish olive, claws blackish.

Female : blackish pale lake red, tip lighter, lower mandible base pale brownish red, tip yellowish horn.

Wings, ♂ 115, 118, 122, 122, 123 ; ♀ 111, 113, 117 mm.

The minangkabau name, *kekes* ; is an imitation of its cry.

The bird lives in secondary jungle and plantations and feeds on different tree fruits. Like *C. longicauda* it does much harm to coconut palms.

The bill of the bird is generally covered with the same resinous matter as mentioned under *C. longicauda*.

72. *Loriculus galgulus* (Linn.).

♂. Aur, Kumanis, Padang Highlands, 200 M.

♂ imm. Balun, Muara Labu, Padang Highlands, 480 M.

2 ♂, ♀. Kodjai, Ophir Districts, 280 M.

Iris very dark greyish brown, bill black, feet brownish yellow, claws brownish black. The immature bird has the bill dark yellow with blackish tomia, the feet dark yellow, and the claws blackish.

Wings, ♂ 78, 81, 81, 86 ; ♀ 83 mm.

PODARGIDAE.

73. *Batrachostomus poliolophus* Hartert (Plate VIII).

♀. Mt. Talamau, Ophir Districts, 1300 M. [No. 929]. Pl. , fig. .

Iris pale yellow, bill horny white, culmen reddish brown, feet rosy horn, claws pale brownish pink.

Measurements in the flesh.—♀ No. 929, tl. 220, t. 100, w. 135, g. 29½, ts. 15.

Contents of stomach : insects.

A rare bird obtained in the dense forest.

CORACIIDAE.

74. *Eurystomus orientalis calonyx* Hodgs.

♂. Buo, Padang Highlands, 280 M.

♂. Aur, Kumanis, Padang Highlands, 200 M.

♂. R i m b o Pengadang, Lebong, Bencoolen, 1000 M.

Iris dark sepia brown, eyelids dull red, bill "minium" red, tip of upper mandible black, feet lake red sometimes suffused with blackish, claws blackish.

Wings 185, 185, 187 mm.

The food of this bird consists chiefly of very hard-shelled beetles. It is found generally at the edge of clearings.

ALCEDINIDAE.

75. *Ramphalcyon capensis cyanopteryx* Oberholser.

R. & K., II, p. 85.

♂, ♀. Buo, Padang Highlands, 280 M.

♀. Aur, Kumanis, Padang Highlands, 200 M.

♀. Koto Alam, Pajokumbuh, Padang Highlands,
320 M.

2 ♀. Pasir Ganting, Indrapura.

Iris very dark brown, eyelids minium red, bill lake red, apical part of culmen and tip of upper and lower mandible blackish, feet lake red, claws blackish. The female No. 5132 had developed ovaries (October).

Wings, ♂ 142 ; ♀ 140, 147, 150, 151, 157 mm.

This big Kingfisher is a permanent inhabitant of the lagoons and estuaries on the coast and also of inland swamps and lake shores. It is at times a very vociferous bird and does much damage to fishponds.

It is with considerable hesitation that we recognise Oberholser's name for these birds. The proposed race is based on a specimen from Tapanuli Bay and is considered to include the birds occurring northwards from Padang.

We have compared the series with an equal series of *R. c. javana* (Bodd.) from Sarawak (wings 143–156 mm.). Three of the Sumatran birds are inseparable from three of the Bornean ; the remaining Sumatran birds have darker, browner caps than these six, the rest of the Bornean birds have brighter, more intensely ochraceous caps.

We agree with Dr. Oberholser, however, that North Sumatran and Bornean Birds are not the same as those of Java (*R. c. capensis*) or of Singapore and the Rhio Archipelago south to Lingga Island (*C. c. hydrophila*): the mantle, wings and tail are of a much richer blue than these last. Dr. Oberholser considers that the southern parts of Sumatra and Billiton Island are occupied by the Javanese form and in addition to the above recognizes and describes the following subspecies of *Ramphalcyon* from localities around Sumatra :—*intermedia* (Hume), Nicobars ; *simalurensis* (Richmond) Simalur Id. ; *sodalis* (Richmond), Banjak Ids. ; *nesoecca* Oberh., Nias Id. ; *isoptera* Oberh., Pagi Ids. ; and *malaccensis* (Sharpe), Malay Peninsula.

76. *Alcedo atthis bengalensis* Gm.

♂. Buo, Padang Highlands, 280 M.

♀. Pangkalan Koto Baharu, Pajokumbuh, Padang Highlands, 120 M.

2♀. Fort de Kock, Padang Highlands, 920 M.

Male: iris very dark sepia brown, bill entirely brownish black, feet minium red, claws black.

The female has the lower mandible dull lake red with blackish tomium and the feet "minium" red suffused with blackish colour.

Wings, ♂ 71; ♀ 74, 73, 73 mm.

Is to be found fishing near brooks, rivers and ponds.

77. *Alcedo euryzona* Temm.

♂. Aur, Kumanis, Padang Highlands, 200 M.

♂. Andalas, Tandjung, Padang Highlands, 720 M.

♂ subad. Alahan Pandjang, Padang Highlands, 1530 M.

Iris very dark brown, bill brownish black, internally minium red, feet minium red, sometimes suffused with some black. The subadult bird had the tip of the bill brownish and the feet orange.

Wings 82, 85, 79 mm.

Is to be found along swift running rivers and brooks, sometimes also along the shores of lakes.

78. *Alcedo meninting meninting* (Horsf.).

♂. Buo, Padang Highlands, 280 M.

2♂, ♀. Singkarak Lake, Padang Highlands, 400 M.

Male: iris very dark brown, bill black, internally minium red, feet minium red, claws greyish minium, with blackish tips.

The female has the upper mandible brownish black, and the lower mandible minium red suffused with some black and with a brownish black tip.

Wings, ♂ 62, 62, 62; ♀ 63 mm.

Is to be found along the shores of lakes and along rivers.

79. *Ceyx rufidorsus rufidorsus* Strickl.*Ceyx eucrythra* and *Ceyx dillwynni* R. & K., II, p. 85.

♂, ♂ imm., 3♀. Aur, Kumanis, Padang Highlands, 200 M.

♀, unsexed juv. Muara Kiawai, Ophir Districts, 40 M.

Iris black (very dark brown), bill and feet orange minium. The immature birds have the bills of a duller colour.

Wings, ♂ 58, 57 ; ♀ 58, 61, 61, 64 mm.

Females (March and May) had developed ovaries.

This species lives in secondary jungle, bush country and wooded swamps. Its food consists chiefly of water-insects and their larvae. I once found a nest of this species in a swamp near Muara Kiawai. The nest was dug out in the clump of earth which still adhered to the roots of a fallen tree. It was a tunnel of about arms length and slanting upwards, no nest material was used. I found it because I saw the old bird coming out of it ; in the nest I found the young No. 4694. This bird is white below washed with tawny on breast and flanks : there is scarcely any trace of majenta on the upper parts, the scapulars are black with greyish white bases, the flight-feathers of the wings are black with a broad greyish-white bar and the coverts are rufous.

80. *Halcyon chloris cyanescens* (Oberholser).

Halcyon chloris R. & K., I, p. 128.

3 ♂, 2 ♂ juv., 5 ♀. Fort de Kock, Padang Highlands, 920 M.

♀. Sandaran Agung, Korinchi Lake, 733 M.

2 ♂, ♀. Bencoolen town.

A female (January) had developed ovaries.

Iris black (very dark sepia), upper mandible horn black, lower mandible white horn tinged with pink, tip and tomium black, feet brownish black, soles dirty brownish yellow.

Wings, ♂ 112, 112, 109, 105, 104, 107 juv., 105 juv. ; ♀ 112, 112, 109, 109, 107, 105, 100 mm.

The upper mandible in the young birds is distinctly hooked at the tip.

H. chloris is the most common of all the kingfishers in Sumatra. It is to be met, generally in pairs, sometimes in larger numbers, in gardens, even in the centre of large towns, in villages, ricefields, bush and plantations, but never in the dense forest. By preference it will choose some prominent bough or other place of advantage, *e.g.* telegraph wires, from where it can look out for its prey, consisting of all kinds of insects, small crustacea, worms and reptiles. I once saw a bat, attacked by a *H. chloris*, which dashed on it and stabbed it with its bill in mid air. The bat was killed on the spot, but the kingfisher did not pick it up, being perhaps intimidated by my presence.

The nest is generally made in the steep bank of some brook, but I have also found nests hollowed out in the globular nests of tree-termites (*Eutermes*). In all these cases the nests were still inhabited by the termites. The bird is very noisy and often during the day its screaming call can be heard. It first utters a shrill note in quick succession, to be followed by the sound, "kakè" repeated several times.

81. *Carcineutes pulchellus* (Horsf.).

R. & K., I, p. 127.

♂. Andalas, Tandjung, Padang Highlands, 720 M.

♂. Aur, Kumanis, Padang Highlands, 720 M.

♂ imm. Penatei, Korinchi, 300 M.

♂. R i m b o Pengadang, Lebong, Bencoolen, 1000 M.

Male : iris dark grey or brownish grey, bill dark lake red, feet dirty ochre, claws blackish. The immature bird has the upper mandible brownish black with reddish tomium, the lower mandible orange red with orange tip.

Wings 87, 86, 86, 86 mm.

This species lives in the dense forest.

At Andalas I found the male sitting in front of its nest tunnel made in the globular nest of a kind of tree-termite (*Eutermes*). In this respect it seems to have similar habits to *Halcyon chloris*. The clutch consisted of two eggs.

BUCEROTIDAE.

82. *Buceros rhinoceros rhinoceros* Linn.

R. & K., II, p. 87.

♀. Balun, Muara Labu, Padang Highlands, 280 M.

♂ juv. Puntian, Kumanis, Padang Highlands, 280 M.

The immature bird, which has not yet any sign of a casque, had the upper mandible pale yellow, culmen chrome, lower mandible dirty pale yellow, claws black. It is only half clad with feathers.

Wing, ♀ 435 mm.

83. *Anthracoceros coronatus convexus* (Temm.).

♂. Buo, Padang Highlands, 280 M.

♂ imm. Aur, Kumanis, Padang Highlands, 200 M.

Iris orange red, bill ivory white, casque apically at the underside and the basal flat part black, lower mandible black at base, orbital skin white, in front of the eyes and gular skin light blue, feet slate grey, claws black.

The immature bird has the eyes dark sienna brown, the bill ivory white with the culmen apically blackish, the small casque apically underneath with a black spot on each side, basal part of casque black, feet lead coloured, soles dirty yellow, claws black.

Wings 313, 303 mm.

I once witnessed in a forest near Aur how a pair of *kikië's* drove away a *Spizaetus limnaetus* from their territory. With a hoarse, whooping war cry, which made the whole vicinity re-echo, accompanied by a constant clacking of their bills, the birds made a wild rush on the *Spizaetus*, who did not attempt to defend himself, but sounded a swift retreat. He was wildly chased to and fro by the hornbills till he was well out of that part of the forest, which evidently formed their hunting territory.

84. *Anthracoceros malayanus* (Raffles).

♂, ♀, ♀ juv. Aur, Kumanis, Padang Highlands,
200 M. (Nos. 3831, 4390, 4806).

Male : iris red, orbital skin black, lower eyelid yellow, bill and casque ivory white, feet blackish.

Female : iris orange brown, orbital skin light claret, bill and feet blackish, claws black.

The juvenile bird has the eyes pale brown, bill greenish pearl, feet greyish, claws blackish.

Wings, ♂ 310 ; ♀ 296, 293 (juv.).

The male has scarcely perceptible grey eyebrows : both females have broad white eyebrows (in the young bird tinged with buff) meeting on the occiput.

Unless the sexing of our series is wrong there is no correlation between sex, colours of bill and eyebrows.

85. *Anorrhinus galeritus* (Temm.).

R. & K., I, p. 129.

♀ imm. Muara Sako, Indrapura, 300 M.

Iris sepia brown with a lighter outer ring, bill blackish, tip dirty white, base lower mandible greyish, feet grey slate, claws black.

This is a young bird (wing 335) brown above, the crown and occipital feathers edged with rufous, those of the wings with buff : the breast is deep buff and the abdomen white. The tail is isabelline basally, blackish brown distally.

This hornbill usually flies in flocks consisting of about ten to fifteen and sometimes more birds, from which habit his Malay name *burung békawan* is derived, as *kawan* means mate or friend.

86. *Rhinoplax vigil* (Forst.).

2♂, ♀. Serapai, Korinchi, 800 M.

Iris reddish brown, orbitals, gular skin and naked neck dark reddish brown, bill basal part dark red (dark brownish crimson), apical part dark ivory yellow, casque dark red, with flat apical part dark ivory yellow.

In two of the above specimens one median tail feather is fully developed and much abraded on its terminal half, while the other has only three-quarters of its full length.

Wings, ♂ 520, 515; ♀ 440 mm.

The female, which is much smaller and has a smaller casque than the male, had a developed ovary (29th July).

The casque of this hornbill is not only used for magical and medicinal purposes, but also for the manufacture of buttons, much in value with the Chinese.

Rhinoplax is a very wily bird and extremely difficult to approach. Only when feeding on the fruits of a certain wild *Ficus*, of which they are very fond, do they lose their natural cautiousness. If one takes up a position under one of these trees, it is not difficult to shoot the birds, but they can only be brought down with a bullet or a heavy charge of buckshot, as they are extremely tough and feed only in high trees.

They never come down to a lower level as *Anorrhinus galeritus* usually and *Buceros rhinoceros* sometimes do.

When they feed on certain fruits in the forest their flesh acquires a nauseous taste. When I had pitched my camp at Serapai, we were short of food and therefore I partook of some of the meat from the *Rhinoplax* I had killed. It was, however, not fit for regular consumption and, curiously enough, after having eaten it, I smelt as badly as the birds.

Besides the usual noise they make when feeding and quarreling in the crowns of big trees, a kind of uproarious braying and bellowing—they have a call which sounds most uncanny if heard in a lonely forest. It begins with: “hook-hook-hook-hook-hook,” starting in very slow measure and progressing with always shorter intervals, to wind up with a “ha-ha-ha-ha-ha-ha” sounding like the infernal laugh of some demon.

87. *Berenicornis comatus* (Raffles).

♀. Suban Ajam, Redjang, Bencoolen, 1200 M.

Iris light pinkish brown, orbitals and gular skin bluish slate, bill dirty blackish with a bone-coloured narrow ridge on the median part of the culmen, feet dirty blackish, claws black.

Measurements in the flesh.—♀ Total length 963, tail 425, w. 350, bill from gape 143, tarsus 60 mm.

One of the rarer hornbills.

MEROPIDAE.

88. *Merops viridis* Linn.

R. & K., I, p. 130 ; R. & K., II, p. 89.

3 ♂, 2 ♀. Fort de Kock, Padang Highlands, 920 M.
(April and May).

♂. Buo, Padang Highlands, 280 M. (February).

♂. Pangkalan Koto Baharu, Padang Highlands,
(April).

♂, ♀. Bencoolen town. (May).

Iris dark crimson, sometimes brown, bill horn black,
feet blackish, sometimes with a brownish or greenish cast.

Wings, ♂ 109, 109, 110, 110, 110, 112 ; ♀ 108, 111,
115 mm.

This species is very common in the Padang Highlands,
where it seems to be migratory, as it is not seen throughout
the whole year. I have found *M. viridis* or *M. s. javanicus*
breeding in Aur, and people have told me, that they have
seen their nests in the Padang Lowlands, but I forgot to
note which of the two species it was.

The nests are made in the ground, being a long tunnel,
hollowed out by the bird. The nesting place near Aur
was on a flat, sandy islet in the middle of the Sinamar
river and there was quite a large breeding colony.

The birds frequent open country and hawk for insects,
gliding through the air with out-stretched wings or sitting
on a prominent bough, to which they return after every
catch.

89. *Merops superciliosus javanicus* Horsf.

Merops philippinus R. & K., II, p. 89.

♂. Aur, Kumanis, Padang Highlands, 200 M.
(March).

♂, ♀. Fort de Kock, Padang Highlands, 920 M.
(March).

♀ imm. Mt. Talamau, Ophir Districts; 400 M.
(April).

Iris dark crimson, bill horn black, feet blackish.

The immature bird has the iris greyish brown, and
paler feet.

Wings, ♂ 133, 132 ; ♀ 127, 118 mm.

This Bee-eater is very common and without any
doubt, migratory, for it is only seen in the Padang High-
lands and Lowlands during the winter months.

For breeding habits see the previous species.

The immature specimen No. 876 makes it probable
that this species at least breeds in Sumatra.

Like the previous species, is only seen in open country, and in the manner of catching its prey it quite agrees with it.

The stomach of one examined contained grasshoppers, flying ants and other insects.

90. Nyctiornis amicta (Temm.).

R. & K., I, p. 130.

♂. Buo, Padang Highlands, 200 M.

♂, ♀. Aur, Kumanis, Padang Highlands, 200 M.

2 ♀. Balun, Muara Labu, Padang Highlands, 480 M.

2 ♂, ♀. Puntian, Kumanis, Padang Highlands, 280 M.

♂, ♂ imm., ♀ imm. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

♂. Mt. Talamau, Ophir Districts, 500 M.

Iris orange, bill horn black, greyish at the base of the lower mandible, feet light green with a bluish cast.

The immature birds have the iris light brownish yellow.

Wings, ♂ 132, 132, 130, 130, 128, 127, 118 mm.; ♀ 126, 125, 122, 121, 122 mm.

Contents of stomach : wasps and coleoptera.

Only to be met with in forest and there not rare ; does not hover as the other *Meropidae*, but seizes its prey by dashing on it from its perch on some bough. I once found a nest tunnel made in a nearly perpendicular earthen wall in the forest. The freshly excavated earth lay before the mouth of the tunnel. According to the natives, this was a nest of *N. amicta*, but I had no definite proof of it, because the bird was not in when I examined the tunnel.

CAPRIMULGIDAE.

91. Caprimulgus affinis affinis (Horsf.).

R. & K., I, p. 131.

♀. Singkarak, Padang Highlands, 400 M.

4 ♂, 4 ♀. Aur, Kumanis, Padang Highlands, 200 M.

♀. Sungei Penoh, Korinchi, 780 M.

♀, ♀ imm. Pasir Ganting, Indrapura.

Iris brown, bill blackish brown, the tip of the lower mandible pinkish sepia, feet purplish brown, soles whitish, claws sepia.

Wings, ♂ 163, 165, 165, 171 ; ♀ 160, 161, 161, 163, 164, 166, 167 mm.

This goat sucker is very common, especially along the sea shore where it sits on the bare sand in full sunshine. The series No. 4449/4456 came from flat, sandy islets in the Sinamar river near Aur. When disturbed they flit a short distance away and then drop suddenly on to some spot, where they remain perfectly motionless, and are then hard to distinguish owing to the strong resemblance they bear to their surroundings.

At night they fly very low, uttering their call note, which is a shrill squeak, and at dawn till six o'clock a.m. they are still busy catching insects. On moonlit nights they like to squat on bare sandy patches and roads.

92. *Caprimulgus indicus jotaka* Temm. & Schl.

♂. Buo, Padang Highlands, 280 M. (March).

Wing 206 mm.

93. *Caprimulgus concretus* Bp.

♀. Talang Ampat, Bencoolen, 40 M. (No. 46).

Wing 172 mm.

We have four topotypes of *C. concretus* from Paku Saribas, Sarawak—three males and a female. Except that the Sumatran female has many of the scapulars edged with buff whereas they are edged with ochraceous in the Bornean topotype (wing 171 mm.) the two are indistinguishable: but the Bornean males show that the colour of the scapulars is of no importance as they exhibit the same variation.

Oberholser has separated an East Sumatran male from *C. concretus* on account of having the outer tail-feathers entirely without white or buffy tips or subterminal bands (*C. mirificus* Oberholser, Smithsonian Misc. Coll. 60, No. 7, 1912, p. 7, Siak River). Two of our Bornean males have large white patches on the ends of the outer tail-feathers: to the third the description of *C. mirificus* exactly applies. It seems evident, therefore, that the proposed form is based on a colour phase and has no existence in fact.

94. *Lyncornis temmincki* Gould.

R. & K., I, p. 131.

3♂, 3♀. Balun, Muara Labu, Padang Highlands, 480 M.

♀. Palupuh, Agam, Padang Highlands, 640 M.

♀. Sukamananti, Ophir Districts, 200 M.

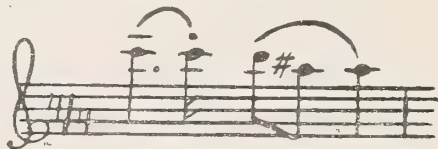
♂. R i m b o Pengadang, Lebong, Bencoolen, 1000 M.

Iris dark brown, bill chocolate brown, tip upper mandible blackish brown, feet pinkish brown, tarsi brownish black with lighted seams between the scutes.

Wings, ♂ 206, 207, 212, 218 ; ♀ 203, 213, 216, 220, 220 mm.

Contents of stomach : green *Pentatomidae*, crickets, beetles, flying termites and other insects.

These birds leave the forest, where they hide during day, at 6 p.m. exactly. Usually flying very high they follow a valley to seek their feeding places, uttering all the time their call note, which can be heard at a great distance. It sounds like:



Then they descend to a lower level where they can expect a good catch, *e.g.* above a ricefield, etc. Here they flit to and fro, and half an hour later they return to their hiding places, their crops being chokeful of insects. Sometimes they return again in the morning at daybreak.

Their flight is very peculiar and quite different from any other birds I know ; very irregular and with many zigzags ; from time to time they raise their wings so that they form a right-angle and hold them so motionless for some time, as they glide through the air.

Suddenly they interrupt their flight by jerky crochets and turns, making it very difficult to hit them, although the smallest size of shot will bring them down, just like snipe. At Balun I observed every evening some thirty birds coming down the valley ; they were so regular in their coming and going that I used to set my watch after them. In the time of the Mahomedan fasting the villagers, who possess no watches, know by the arrival of the birds that it is time to break their fast.

MICROPODIDAE.

95. *Micropus affinis subfurcatus* (Blyth.).

2 ♂, ♀. Fort de Kock, Padang Highlands, 920 M.

Iris black, or very dark brown ; bill black, feet pinkish suffused with black.

Wings, ♂ 140, 140 ; ♀ 135 mm.

96. *Chaetura leucopygialis* Blyth.

♂. Balun, Muara Labu, Padang Highlands, 480 M.

Bill black, feet brownish black, claws black.

Wing 125 mm.

The species frequents the neighbourhood of the forest, and flies very low late in the afternoon. It is most difficult to shoot as it has a very irregular flight.

97. *Collocalia fuciphaga fuciphaga* (Thunberg).

♀. Muara Kiawai, Ophir Districts, 40 M.

2 ♂. Mt. Talamau, Ophir Districts, 400–2800 M.

♂. Sukamenanti, Ophir Districts, 200 M.

Iris, bill and feet black.

Wings, ♂ 118, 118, 119 ; ♀ 119 mm.

The Sukamenanti bird is distinctly darker below than the others and in this respect agrees with the description of *C. f. aerophila* Oberholser, based on a single specimen from Nias Island : the wing, measured by that author's method, is also of the same length as the type, viz. 115 mm.

98. *Collocalia linchi oberholseri* Stresmann.

♀ (?). Andalas, Tandjung, Padang Highlands,
720 M.

Iris, bill and feet black.

Wing 104 mm.

This specimen belongs neither to the typical form north *C. l. cyanoptila* Oberholser, ranging from Borneo to the Malay Peninsula. We have therefore recorded it by the name given to birds from the adjacent island of North Pagi with the description of which it seems to agree.

99. *Collocalia innominata* Hume.

R. & K., II, p. 90.

♂ ad., 3 ♂ juv., ♀ juv. Caves at Buo, Padang
Highlands, 300 M. (April).

Iris black, or very dark brown ; bill black, feet dull black.

Wing, ♂ ad., 125 mm.

The male has a brown rump band, not very marked, with dark shaft stripes : the band is present in two of the nestlings, but less clearly ; absent in the remaining two.

As the adult agrees sufficiently well with numerous examples from the Malay Peninsula and differs from the Balun example, we think it is probably correct to record the series under the above name.

Contents of stomach : small insects.

The Cave of Buo is a natural tunnel, excavated by a river passing, in many meanderings, underneath a mountain range of limestone. The length of the tunnel is several miles and its walls are covered with the nests of these swifts.

It is quite incomprehensible how the birds can find their way back to their nests in the absolute dark and amongst the bewildering noise caused by the twittering of hundreds of birds.

The nests are infested by bugs (*Cimicidae*); in one single nest I counted 555 bugs, the very small larvae included. The nest contained a nearly hatched egg, and was therefore occupied, a fact, which seems next to incredible. The nests were made of moss and other vegetable matter, fixed to the wall with the well-known slimy excretion from the buccal glands.

The ♂ No. 3721 was caught sitting on a nest, the Nos. 3722, 3723, 3724 and 3725 are nestlings.

100. *Collocalia lowi lowi* (Sharpe).

♂. Balun, Muara Labu, Padang Highlands, 480 M.

Iris, bill and feet black.

Wing 127 mm.

The rump of this specimen is the same dark colour as the rest of the upper parts.

This is probably an eastern race of *Collocalia innotata*, but we have not sufficient material of it to decide the point.

101. *Collocalia gigas* Hartert & Butler. (Plate VIII).

♂, ♀. Balun, Muara Labu, Padang Highlands, 480 M.

Iris black, or very dark brown; bill and feet black.

Wings, ♂ 158; ♀ 162 mm.

The Giant *Collocalia*, first discovered in the Malay States and later found in Java is now shown by Mr. Jacobson's specimens to be an inhabitant of Sumatra also.

102. *Hemiprocne longipennis harterti* Stresemann.

R. & K., I, p. 132.

♀. Buo, Padang Highlands, 280 M.

♂. Aur, Kumanis, Padang Highlands.

2♂. Andalas, Tandjung, Padang Highlands, 720 M.

♂. Balun, Muara Labu, Padang Highlands, 480 M.

♀. Bencoolen town.

2♂. Suban Ajam, Redjang, Bencoolen, 1000 M.

♂. Pasumah, Mt. Dempu, Palembang, 900 M.

Iris black (very dark brown), bill black, feet purplish grey, claws black.

Wings, ♂ 159, 162, 166, 169, 171, 172; ♀ 155, 157, 165 mm.

Very common in the Padang Highlands. Flies generally at a great height in the evening between 5.00 and 6.30 p.m.

103. *Hemiprocne comata comata* (Temm.).

♂, 3 ♀. Balun, Muara Labu, Padang Highlands,
480 M.

2 ♂, ♀. Lubok Sikaping, Padang Highlands,
440 M.

♂. Penatei, Korinchi, 300 M.

♂. R i m b o Pengadang, Lebong, Bencoolen,
1000 M.

Iris very dark brown, bill black, feet pinkish suffused with black, soles dirty dark yellow, claws black.

Wings, ♂ 119, 125, 127, 125, 126, 126, 129, 130 ; ♀ 123, 127, 128, 128 mm.

Frequents the forest or its immediate neighbourhood, never flies very high, but sits on an elevated bough, telegraph wires or other prominent place, from where it sallies out and after some turns in the vicinity returns to the same spot.

TROGONIDAE.

104. *Pyrotrogon diardi sumatranus* Blasius.

2 ♂. Puntian, Kumanis, Padang Highlands, 280 M.

♂. Muara Kiawai, Ophir Districts, 40 M.

Iris light chestnut or dark orange red, orbital skin heliotrope, cheeks pale sky blue, on the lower eyelid a dirty white patch, upper mandible dark cobalt blue, sometimes with a violet cast, culmen, tip, and tomia black, lower mandible cobalt blue, tip and tomia black, feet rosy lavender to greyish lavender, claws blackish.

Wings 143, 148, 151 mm.

All the trogons are birds of dense forest.

105. *Pyrotrogon kasumba* (Raffles).

♂. Muara Sako, Indrapura, 300 M.

Iris black (very dark brown), bill cobalt blue, culmen and tip black, orbital skin above the eye light sky blue, underneath lavender blue, on the lower eyelid a dirty pinkish patch.

Wing 143 mm.

106. *Pyrotrogon erythrocephalus flagrans* (Müller).

♂. Andalas, Tandjung, Padang Highlands, 720 M.

Iris greyish, orbital skin lavender blue, bill greyish blue, tip black, feet brownish pink.

Wing 130 mm.

In Korinchi all trogons with a red underside are called *punai kĕretjo*.

107. *Pyrotrogon duvauceli* (Temm.).

R. & K., I, p. 133.

♀. Puntian, Kumanis, Padang Highlands, 280 M.

2♂. Muara, Kiawai, Ophir Districts, 40 M.

♂, ♀ imm. Serapei, Korinchi, 800 M.

♀. Muara Sako, Indrapura.

Iris dark yellowish brown, orbital skin light sky blue, pinkish blue at the cheeks, on the lower eyelid a dirty white patch, upper mandible black, side of the basal half cobalt blue, tomia black, lower mandible cobalt blue, tip and the median part black.

Wings, ♂ 102, 105, 106 ; ♀ 105, 107, 108 mm.

The terminal black band on the tail is, in the female, about 3 mm. ; in the male 6–10 mm. ; the vermiculations on the wing coverts are in the female light brown, in the male white and much finer.

108. *Pyrotrogon oreskios uniformis* Robinson.

♂. Mt. Talamau, Ophir Districts, 500 M.

♂. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

Iris grey, orbitals pale greyish blue, bill light cobalt blue, culmen and tip black, feet pinkish grey, claws blackish.

Wings 128, 122 mm.

Contents of stomach : Phasmidae, caterpillars.

109. *Hapalarpactes reinwardti mackloti* (Müller).

R. & K., I, p. 133.

♂, ♀. Alahan Pandjang, Padang Highlands, 1500 M.

3♂, 2♀. Tanangtalu, Ophir Districts, 1000 M.

4♂, 2♀. Mt. Talamau, Ophir Districts, 1000–1400 M.

♂, ♀. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

2♀. Suban Ajam, Redjang, Bencoolen, 1200 M.

2♂, ♀. Air Njuruk, Mt. Dempu, Palembang, 1400 M.

Iris dark grey, orbital skin turquoise blue, emerald green at gape, a dirty white patch on the lower eyelid, bill lake red, culmen suffused with black or brown, feet and claws yellowish orange.

Wings, ♂ 125, 125, 128, 130, 130, 130, 131, 132, 132, 133, 134 ; ♀ 119, 120, 120, 127, 128, 129, 130, 134, 134, mm.

The vermiculations on the wings are, except their greater narrowness if compared with the males, not "whitish" (Robinson and Kloss, p. 134), but indistinct, because the yellow is suffused with bronze green. The adult female No. 4774, which had a developed ovary, shows on the upper abdomen small interrupted bandings of the same dark olive colour as the pectoral band, a peculiarity possessed by none of the other specimens.

This species is somewhat common in heavy jungle and the least rare of all the Trogons of Sumatra. Its song consists, like that of the other Trogons, of rolling, low pitched notes.

Contents of stomach : green caterpillars, grasshoppers, Phasmidae, beetles, but in most cases also fruits.

CUCULIDAE.

110. *Clamator coromandus* (Linn.).

Coccytes coromandus R. & K., II, p. 91.

♂. Fort de Kock, Padang Highlands, 920 M.
December.

Iris very dark brown, bill horn black, base of lower mandible lighter, feet lead colour, soles dirty brownish yellow, claws black.

Wing 160 mm.

Contents of stomach : big hairy caterpillars.

This rather rare species inhabits the long grass and lalang. It is probably a seasonal visitor to Sumatra.

111. *Surniculus lugubris brachyurus* Stresemann.

R. & K., I, p. 134.

3♂, ♀. Buo, Padang Highlands, 280 M.

♀ imm. Balun, Muara Labu, Padang Highlands,
480 M.

♂. Aur, Kumanis, Padang Highlands, 200 M.

2♂. Muara Kiawai, Ophir Districts, 40 M.

♂, ♀ imm. Pasumah, Mt. Dempu, Palembang,
900 M.

Iris dark brown, bill black, feet dark slate, claws black.

The immature bird No. 721 had bluish grey eyes and lead coloured feet.

Wings, ♂ 120, 122, 124, 124, 125, 126, 127 ; ♀ 122, 120 mm., 117 mm.

The female No. 3701 (28th February) had a developed ovary.

Contents of stomach : hairy caterpillars.

The immature birds are spotted with white.

The three males in the Buo series were all courting the female.

Surniculus lugubris resembles very strikingly one of the smaller *Dicruridae* in the nest of which it is said to deposit its eggs. The likeness is so strong that usually I was not sure which of the two I had shot, till I picked up the bird.

112. *Hierococcyx bocki* Wardlaw Ramsay.

2♀ imm. Suban Ajam, Redjang, Bencoolen,
1000 M. July [Nos. 525, 529].

Wings 188, 190 mm.

The crown of the older bird is very dark grey, of the younger grey and rufous; the latter has the back and wings dark brown clearly barred with pale rufous; the sides of the neck and the breast are much suffused with rich rufous, the anterior underparts are longitudinally striped with dark brown, the posterior parts transversely barred with the same colour. The upper parts of the older bird are obscurely barred and it has much less rufous on foreneck and breast.

113. *Hierococcyx fugax* (Horsf.) subsp.

Hierococcyx fugax nisicolor R. & K., II, p. 91.

♀ subad. Koto Tuo, Mt. Singgalang, Padang Highlands, 1000 M. March (No. 868).

♀ imm. Balun, Muara Labu, Padang Highlands, 480 M. July (No. 4247).

♂ imm. Sungei Kumbang, Korinchi, 1400 M. August (No. 4955).

Subad. Iris pale yellow, eyelids yellow, orbital skin yellowish green, upper mandible brownish black, base and tip yellowish green, lower mandible greenish yellow, tomia and tip brownish, feet and claws chrome.

Imm. Iris greyish yellow or dark grey with brownish inner ring, orbital skin lemon, upper mandible blackish, base greenish yellow, tip yellowish or brownish, lower mandible greenish yellow, tip blackish, bill interiorly yellow, feet and claws chrome.

Wings, ♂ 175; ♀ 178, 172 (imperfect) mm.

Two forms of this species are reported from the Sunda Islands, *H. f. fugax* (Horsf.) from Java, a resident; and *H. f. nisicolor* (Blyth) from Nepal, a visitor: the latter is stated to have a smaller bill. The bill of the older of the above birds, taken in March, is certainly a trifle shorter than the others (about 1 mm.), but there is hardly sufficient difference between them to consider that the series represents two subspecies. Until these specimens have been compared with topotypes of *nisicolor* their exact determination must remain unsettled.

114. *Cuculus micropterus concretus* S. Müll.

R. & K., II, p. 92.

♀ imm. Rimbo Pengadang, Lebong, Bencoolen,
1000 M. June (No. 182).

Iris greyish brown, upper mandible brownish black,
yellow at the gape, lower mandible yellow, tip brown, feet
pale yellow.

Wing 162 mm.

115. *Cuculus optatus* Gould.

♂. Fort de Kock, Padang Highlands, 920 M.
January (No. 3604).

Iris yellow, upper mandible horn black, slightly
yellowish at the base, lower mandible greenish yellow, tip
and tomia black, bill internally orange, feet pale orange
yellow.

Wing 190 mm.

Though very like *C. canorus* this specimen is too small
to be *C. c. telephonus*, Heine, which also occurs in Malaysia
(wings 208–240 mm.). Dr. Hartert has examined the skin
and confirms our determination. Evidently a rare bird in
Malaysia as we have seen only one other example—a male
from Koh Lak, S. W. Siam obtained in April (wing
198 mm.).

116. *Cuculus intermedius musicus* Ljungh.

Cuculus intermedius insulinde R. & K., I, p. 135.

♂. Suban Ajam, Bukit Kaba, Bencoolen, 1200 M.
June.

♂ imm., ♀ imm. Pasumah, Mt. Dempu, Palembang,
900 M. September.

Iris greyish with outer ring, eyelids lemon, upper
mandible horn-black, lower mandible yellow, tip black, feet
yellow. The immature birds have the iris yellowish brown
with grey outer ring, upper mandible black, with yellowish
gape, lower mandible yellow, tip brownish black.

Wings 148, 143 mm., 138 mm.

The young birds have the upper parts barred with white
and the throat and foreneck barred with dark brown.

117. *Cacomantis merulinus threnodes* (Cabanis).

Cacomantis merulinus merulinus R. & K., II, p. 92.

5 ♂, ♀, 1 unsexed. Fort de Kock, Padang High-
lands, 920 M.

♂. Koto Tua, Singgalang, Padang Highlands,
1000 M.

♂. Baso, Agam, Padang Highlands, 900 M.

♂ imm. Balun, Muara Labu, Padang Highlands,
480 M.

♀. Serapei, Korinchi, 800 M.

All taken between January and July inclusive : a female had a developed ovary in the latter month.

Iris brownish carmine, brown, or dark grey ; maxilla black or brownish black, mandible pale brown with dark tip ; mouth red ; feet yellow, claws black. The immature bird had the iris orange.

Wings ♂ 97, 98, 100, 101, 102, 103, 103, 95 mm. ; ♀ 98, 101 ; sex inc. 97 mm.

The series is rather variable ; one specimen in the rich colour of the abdomen, shows approach to *C. m. querulus* Heine, of India and Indo-China ; one, in its pale yellowish abdomen, closely resembles *C. m. dysonomus* ; but the bulk are typical *threnodes* and we have so listed all.

The female from Fort de Kock (No. 1133) is a partial albino : the lower breast, abdomen and undertail coverts are rufous, elsewhere it is white except for dusky edges to the wing quills and dusky bars on the rectrices. The colour of the iris was not ascertained.

The collector notes that of sixteen examples obtained in four years only two were females.

Our own experience is very similar : of twenty-seven examples of *C. merulinus* from the Malay Peninsula only three are females and they are in the banded phase : two of *C. m. dysonomus* (Heine) from Borneo are both males ; but of five examples of *C. m. lanceolatus* (S. Müll.) from Java, three are females and none of them banded.

Of eighteen examples of the allied species *C. sepulchralis* (S. Müll.) on the other hand, six are females and only two are banded and they are assuming rufous plumage below.

118. *Penthoceryx sonnerati fasciolata* (S. Müll.).

Penthoceryx sonnerati pravata R. & K., I, p. 135 ; R. & K., II, p. 92.

♂, ♀. Aur, Kumanis, Padang Highlands, 200 M.

Iris sepia, upper border of the iris whitish, upper mandible black, lower mandible blackish grey, feet greenish yellow, soles yellow, claws blackish.

Wings, ♂ 112 ; ♀ 112 mm.

According to the natives this species lays its eggs in the nest of the tailor-bird *Orthotomus sepium cineraceus* Blyth.

Birds from Sumatra are darker than those from Java or from the Malay Peninsula and we therefore use for them a name under which they were described by S. Müller.

119. *Chalcococcyx xanthorhynchus* (Horsf.).

♂. Muara Kiawai, Ophir Districts, 40 M.

Iris red ; bill yellow, base red ; feet blackish, soles dirty olive.

Wing 98 mm.

120. *Chalcococcyx basalis* (Horsf.).

♀. Bencoolen town. June, 1916 (No. 30).

Iris white ; bill black, base of lower mandible yellowish grey ; feet blackish.

Wing 97 mm.

This is a very rare bird in the Malaysian subregion.

121. *Centropus bengalensis javanicus* (Dumont).

R. & K., I, p. 139.

♂, ♂ imm. Fort de Kock, Padang Highlands, 920 M.

♀ imm. Muara Kiawai, Ophir Districts, 40 M.

♀. Lubuk Landur, Ophir Districts, 200 M.

♂. Sandaran Agung, Korinchi, 733 M.

Iris sepia (Robinson and Kloss give carmine, but all my specimens had dark brown irides, perhaps none of them are quite adult), bill black, feet black, blackish or lead colour, soles blackish, claws black.

Wings, ♂ 138 mm., 141, 145 ; ♀ 146 mm, 159 mm.

Contents of stomach : insects.

Very common in long grass and lalang. If disturbed the bird flies clumsily for a short distance and alights on the high grass with outspread wings.

122. *Centropus sinensis bubutus* (Raffles).

♂, ♀. Buo, Padang Highlands, 280 M.

2♂, ♀. Aur, Kumanis, Padang Highlands, 200 M.

♂. Painan, Padang Lowlands.

♀. Balun, Muara Labu, Padang Highlands, 480 M.

Iris carmine, bill, feet and claws black.

Wings, ♂ 200, 210, 216, 220 ; ♀ 217, 225, 228 mm.

This species is an inhabitant of scrub jungle ; it has a low booming call note sounding like "bu-bu-bu," of which its native name has been derived. The bird has a heavy flight, and a peculiar way of diving when alighting, into high grass or scrub. Although under ordinary circumstances it looks as if it was not able to fly for any considerable distance, I found it, in 1908 on the island of Krakatau, where it must have come after the eruption of 1883, which destroyed all animal life there. To reach

the island the bird must have flown at least 15 K.M. in one stretch across the sea, this being the distance between Krakatau and the nearest island Sibesi in the Straits of Sunda. The bird from Painan was shot in the scrub near the beach.

123. *Zanclostomus javanicus pallidus* Robinson & Kloss.

♂. Aur, Kumanis, Padang Highlands, 200 M.

♂. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

Iris dark brown or dark crimson, bill dark lake red, feet bluish lead colour.

Wings 145, 146 mm.

124. *Rhopodytes tristis elongatus* (S. Müll.).

R. & K., I, p. 136.

♀. Tanangtalau, Ophir Districts, 1000 M.

♂, ♀. Serapei, Korinchi, 800 M.

2♂. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

♂. Suban Ajam, Mt. Dempu, Bencoolen, 1000 M.

♂. Air Njuruk, Mt Dempu, Bencoolen, 1300 M.

Iris dark crimson, sometimes dark reddish brown, orbital skin dark crimson, bill sage green, feet bluish lead colour, claws blackish.

Wings, ♂ 138, 145, 151, 151, 153; ♀ 143, 145 mm.

In heavy forest. These birds were not observed by me in the scrub or secondary jungle as was *R. diardi*, and not below 800 M.

125. *Rhopodytes diardi* (Lesson).

R. & K., I, p. 137.

♂. Aur, Kumanis, Padang Highlands, 200 M.

♂. Pangkalan Koto Baharu, Pajokombuh, Padang Highlands, 120 M.

♂, ♀. Muara Kiawai, Ophir Districts, 40 M.

♀. Sukamenanti, Ophir Districts, 200 M.

♀. Serapei, Korinchi, 800 M.

2♀. Pasumah, Mt. Dempu, Palembang, 900 M.

Irides in both sexes very pale bluish grey, sometimes bluish cream, orbital skin dark crimson, bill sage green, bluish grey at base of mandible, feet lead colour, soles dirty greyish brown, claws horn black.

Wings, ♂ 127, 128, 129; ♀ 124, 128, 130, 130, 134 mm.

The stomach of one examined contained a mantis and the pupa of a butterfly.

In scrub jungle, secondary and heavy forest, also in solitary clumps of trees or bamboo bushes. The example from Muara Kiawai is from the swampy jungle. It ranges from about 100 to 900 M. (If this is really *R. diardi* I must point out that none of my specimens had red irides as given for an alternative by Robinson and Kloss, p. 137).

126. *Rhopodytes sumatranus* (Raffles).

♀. Puntian, Kumanis, Padang Highlands, 280 M.
(No. 4432).

Iris very pale bluish grey, orbital skin dark crimson, bill sage green, bluish grey at the base, feet lead colour, claws horn black.

Wing 144 mm.

127. *Rhinortha chlorophaea chlorophaea* (Raffles).

R. & K., I, p. 138.

♀. Buo, Padang Highlands, 280 M.

4 ♂, ♀. Aur, Kumanis, Padang Highlands, 200 M.

♀. Talang Ampat, Bencoolen, 40 M.

Iris dark brown, bill greyish pale green, orbital skin pale bluish green, bill pale greyish green, feet lead colour, claws blackish.

Wings, ♂ 112, 112, 112, 118 ; ♀ 113, 115, 122 mm.

Common in low country, in scrub and secondary jungle, where it creeps about between the vegetation on trees and bushes ; its flight is very clumsy.

128. *Phoenicophaes curvirostris erythrognaethus* Bp.

♂. Buo, Padang Highlands, 280 M.

♂, ♀. Muara Kiawai, Ophir Districts, 40 M.

♀. Serapei, Korinchi, 800 M.

♀. Talang Ampat, Bencoolen, 40 M.

The iris of the male is bluish grey (Wedgewood blue), that of the female orange red (this striking difference between the sexes was noted in all the specimens), orbital skin dark crimson, bill sage green, base reddish mahogany, feet dark lead colour.

Wings, ♂ 176, 178, 179 ; ♀ 167, 172, 174 mm.

Contents of stomach : grasshoppers and hairy caterpillars.

In secondary jungle and at the edge of clearings.

129. *Carpococcyx radiatus viridis* Salvad.

♂ imm. Muara Sako, Indrapura, 300 M.

♂. R i m b o Pengadang, Lebong Bencoolen,
1000 M.

♂. Air Njuruk, Mt. Dempu, Palembang, 1400 M.

Iris dark brownish crimson, orbital skin at the lores and above the eye verditer green, behind the eye pale lilac, cheek pale indigo blue, upper mandible dark sage green suffused with black, tomia dark sage green, lower mandible sage green, feet pale greyish green, claws pale greyish green suffused with blackish.

The immature bird has the iris dark grey, orbital skin ? (not noted), bill horn black, the base of the lower mandible whitish, feet lead colour, claws blackish.

Measurements in the flesh.—♂ No. 332, Total length 538, tail, 267, wing 199, bill from gape 53, tarsus 72 mm.
♂ No. 598, Total length 534, tail 275, wing 196, bill from gape 55½, tarsus 69 mm.

This very shy ground bird, rare in collections, lives in the heavy forest, where it feeds on insects. Two of the specimens were snared.

The immature bird is rufous throughout, barred with black except on the distal portion of the upper surface of the tail. A few of the wing coverts and scapulars are greenish and the flight feathers are washed with the same colour.

INDICATORIDAE.

130. *Indicator archipelagicus* Temm.

♂. Muara Kiawai, Ophir Districts, 40 M.
(No. 4863).

Iris crimson; maxilla horny, mandible fleshy, tip blackish; feet dark grey, claws slate.

Wing 98 mm.

This is the first specimen found in Sumatra. The bird was shot in the swampy jungle while it was sitting on a very high tree, uttering incessantly its call note, which consisted of the sound *è*, repeated several times, followed by a whizzing *rrrrr*. The specimen shot was the only one met, so it seems to be very rare.

CAPITONIDAE.

131. *Calorhampus fuliginosa hayi* (Gray).

R. & K., I, p. 139.

♂, ♀. Buo, Padang Highlands, 280 M.

2♂, ♀, ♀ imm. Aur, Kumanis, Padang Highlands, 200 M.

♂ subad. Andalas, Tandjung, Padang Highlands, 720 M.

♂. Lubuk Sikaping, Padang Highlands, 440 M.

♂, ♀. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

Male : iris brown, bill dull black, feet orange, claws blackish.

The female has the bill very pale brown, and in the immature bird the iris is greyish brown.

Wings 79, 81, 83, 83, 85, 85 ; ♀ 73 (*imm.*), 80, 82, 83 mm.

The immature bird is not only to be distinguished by the brick red tips of the secondary coverts, and the pale sulphur wash on the belly, but also by the absence of reddish brown on the throat, which is entirely blackish dull sepia ; in the subadult birds the brownish red feathers appear between the brown ones. In the adult bird the pale brick red feathers of the throat are indistinctly barred with dull sulphur yellow.

Common in country with isolated clumps of trees.

132. *Chotorhea chrysopogon chrysopogon* (Temm.).

R. & K., I, p. 140.

♀. Buo, Padang Highlands, 280 M.

3 ♂, ♀. Aur, Kumanis, Padang Highlands, 200 M.

♀. Singkarak, Padang Highlands, 400 M.

2 ♂, 2 ♀. Balun, Muara Labu, Padang Highlands, 480 M.

♀. Muara Kiawai, Ophir Districts, 40 M.

♂. Tanangtalau, Ophir Districts, 1000 M.

♂, ♀. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

Iris dark brown, sometimes crimson brown, upper mandible black, lower mandible whitish grey, tip and tomia black, feet dirty olive.

Wings 125, 125, 127, 127, 128, 129, 133 ; ♀ 123, 125, 125, 127, 128, 130 mm.

Common in secondary forest, in clumps of trees near villages, rarer in dense forest, from the coast up to 1000 M.

I know of a bird in possession of one of my friends, which, bought as a nestling, has reached now an age of nine years. It is very aggressive and attacks poultry, ducks and other birds.

Its call consists of one single far audible note, repeated incessantly. Although it occasionally takes insects, it feeds chiefly on fruits.

133. *Chotorhea mystacophanes mystacophanes* (Temm.).

2 ♂. Aur, Kumanis, Padang Highlands, 200 M.

♂, ♀. Balun, Muara Labu, Padang Highlands, 480 M.

♂. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

Iris dark yellowish brown, bill black, base lower mandible greyish, feet dirty dark olive.

Wings, ♂ 93, 94, 95, 97, 98; ♀ 96 mm.

The female had developed ovaries.

Common in secondary forest.

134. *Cyanops henrici* (Temm.).

♂. Balun, Muara Labu, Padang Highlands, 480 M.

Iris brown, bill black, feet dirty olive.

Wing 95 mm.

135. *Cyanops oorti oorti* (S. Müll.).

R. & K., I, p. 141.

5 ♂, 3 ♀. Fort de Kock, Padang Highlands, 920 M.

♂. Tanangtalu, Ophir Districts, 1000 M.

♀. Mt. Talamau, Ophir Districts, 1300 M.

♂. Suban Ajam, Redjang, Bencoolen, 1000 M.

2 ♂, ♀. Air Njuruk, Mt. Dempu, Palembang, 1400 M.

Iris chestnut, bill black, base of lower mandible greyish, feet dirty olive.

Wings 87, 88, 88, 90, 91, 92, 92, 93, 94, 94, 98; ♀ 87, 89, 90, 90, 90 mm.

I have found this the most common of the Sumatran *Capitonidae*; it inhabits the dense forest, as well as cultivated country, and even towns.

The call is an endless repetition of the same note, and at every note the bird nods its head.

The males are much more numerous; out of a series of thirty-three which I obtained only nine were females.

136. *Mesobucco duvauceli duvauceli* (Lesson).

R. & K., I, p. 141.

♂. Aur, Kumanis, Padang Highlands, 200 M.

♀ imm. Muara Kiawai, Ophir Districts, 40 M.

Iris brown, bill black, feet dirty olive.

The female has the base of the lower mandible greyish.

Wings, ♂ 74; ♀ 71 mm.

This species is not common anywhere.

137. *Xantholaema haemacephala delica* Parrot.

Xantholaema haemacophala R. & K., I, p. 142; R. & K., II, p. 95.

Xantholaema haemacophala rafflesius R. & K., III, p. 95.

5 ♂, ♀. Fort de Kock, Padang Highlands, 930 M.

♂. Sandaran Agung, Korinchi, 733 M.

♂. Bencoolen town.

Iris sepia or greyish brown, orbitals purplish crimson, bill black, lower mandible greyish or brownish at base, feet pinkish "minium," claws black.

Wings, ♂ 75, 75, 76, 76, 77, 77, 78 ; ♀ 74 mm.

The call, sounding like some hammering note, is repeated incessantly. When calling the bird perches on a dead or bare twig, by preference on the top of a tree. It frequents open country, plantations, villages and towns, but is never seen in the forest.

The males considerably outnumber the females.

Of a series of twenty-one examples I obtained, only five were females.

138. *Psilopogon pyrolophus* S. Müll.

R. & K., I, p. 143.

♂ juv. Balun, Muara Labu, Padang Highlands, 480 M.

♂ subad. Koto Tua, Mt. Singgalang, Padang Highlands, 1000 M.

♀. Fort de Kock, Padang Highlands, 920 M.

♀. Baso, Agam, Padang Highlands, 900 M.

♂. Tanangtalau, Ophir Districts, 1000 M.

♂, ♀. Mt Talamau, Ophir Districts, 1200-1300 M.

♂. Air Serasah, Talamau, Ophir Districts, 1850 M.

3 ♂, 2 ♀. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

♂. Suban Ajam, Mt. Kaba, Bencoolen, 1200 M.

2 ♂. Air, Njuruk, Mt. Dempu, Palembang, 1400 M.

Iris brownish crimson, bill sage green with a median vertical brownish black bar, feet yellowish olive, soles yellowish, claws blackish.

The young males have a very small frontal crest and, like females, lack a crimson patch on the occiput.

Wings, ♂ 114, 116 juv., 117, 120, 120, 121, 123, 123, 124, 125 mm. ; ♀ 113, 117, 119, 120, 121 mm.

This species is very common from about 900 M. up to about 1500 M., but is met still higher up the mountains in isolated pairs. The highest altitude at which I found it is 1850 M. It occurs in old forest, secondary jungle and in plantations, also near villages, but never in towns. Its habits are described by Robinson and Kloss (p. 144). I never found anything but fruit in its stomach.

Its call notes are quite different from that of the other barbets.

Besides whistling notes, the bird produces also a grating sound, which is nearly the same as the chirping noise emitted by one of the big singing *Cicadidae*.

PICIDAE.

139. *Picus puniceus observandus* (Hartert).

- ♂. Muara Kiawai, Ophir Districts, 40 M.
- ♀. Balun Muara Labu, Padang Highlands, 480 M.
- ♀. Aur, Kumanis, Padang Highlands, 200 M.
- ♂. Pangkalan Koto Baharu, Pajokumbuh, 120 M.

Iris dark crimson, orbital skin bluish grey, upper mandible horn-black, tip and tomia yellowish horn, lower mandible dark yellowish horn, base brownish, feet dirty dark brownish olive.

Wings, ♂ 125, 128 ; ♀ 122, 127 mm.

The males are easily distinguished by the crimson cheeks.

Some specimens have, as many other woodpeckers of this collection, the feathers badly daubed with resin, especially the tail feathers.

140. *Picus chlorolophus vanheysti* (Robinson & Kloss).

R. & K., II, p. 97 ; R. & K., III, p. 96.

- ♂. Air Njurus, Mt. Dempo, Palembang, 1400 M.
- ♀. Fort de Koek, Padang Highlands, 920 M.
- ♂. Mt. Talamau, Ophir Districts, 1300 M.

Male : iris dark crimson, orbital skin very dark bluish slate, upper mandible greyish or greenish yellow, culmen sometimes blackish, tomia pale yellow, lower mandible greenish yellow, tip blackish, feet sooty olive.

The female has the upper mandible black, tomia pale yellow and the lower mandible pale yellow, with black tip.

Wings, ♂ 122, 126 ; ♀ 122 mm.

Contents of stomach : ants.

141. *Chrysophlegma miniatus malaccensis* (Latham).

R. & K., I, p. 148.

- 3 ♂, 2 ♀. Fort de Kock, Padang Highlands, 920 M.
- ♂ imm. Buo, Padang Highlands, 280 M.
- ♀. Muara Kiawai, Ophir Districts, 40 M.
- ♀. Mt. Talamau, Ophir Districts, 1000 M.
- ♀. Tanangtalu, Ophir Districts, 1000 M.
- ♀. Bencoolen town.
- 2 ♂, ♀, ♀ imm. Rimbo Pengadang, Bencoolen, 1000 M.
- ♀. Air Njurus, Mt. Dempo, Palembang, 1400 M.

Iris dark crimson, upper mandible horn black, lower bluish pearly white, feet dirty dark olivegreen or brownish olive.

Wings, ♂ 121 (*imm.*), 125, 127, 129, 130 (*imm.*), 131, 132 ; ♀ 123, 123, 125, 127, 129, 131, 131, 132 mm.

A female (5th June) had a developed ovary.

The immature birds have brown crowns and very coarsely barred underparts.

Contents of stomach : insects, chiefly ants.

This species is very common and to be met in dense and secondary jungle, plantations, villages and even in towns. Its vertical distribution is very wide, ranging from the coast up to 1400 M.

142. *Chrysophlegma mentale humei* Hargitt.

♂, ♀. Balun, Muara Labu, Padang Highlands, 480 M.

♀. Aur, Kumanis, Padang Highlands, 200 M.

♀, ♀ *imm.* Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

♀. Pasumah, Mt. Dempo, Palembang, 900 M.

Iris dark crimson, orbital skin dirty olive, upper mandible black, yellowish green at the gape, lower mandible pearly white, base greenish grey, tomia and sometimes the tip blackish.

Wings, ♂ 130 ; ♀ 127 (*imm.*), 130, 131, 134, 139 mm.

In the immature bird the black feathers of the throat are only slightly edged with white and the chestnut of the cheeks and breast is paler and duller.

143. *Chrysophlegma flavinucha mystacale* Salvad.

R. & K., I, p. 147.

♂, ♂ *imm.*, 2 ♀. Tanangtalau, Ophir Districts, 1000 M.

2 ♂, 3 ♀. Mt. Talamau, Ophir Districts, 1200–1500 M.

3 ♀, 1 *imm.*, unsexed. Sungei Kumbang, Korinchi, 1400 M.

♂, ♀. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

♂, ♀. Suban Ajam, Redjang, Bencoolen, 1200 M.

♂, ♂ *imm.*, 4 ♀. Air Njuruk, Mt. Dempo, Palembang, 1400 M.

Iris dark crimson or dark yellowish brown, orbital skin dark olive, bill pearly grey with a greenish cast, tip horny transparent, feet dull greenish grey, soles yellowish brown, claws blackish.

Wings, ♂ 137, 140, 141, 142, 143, 144, 148, 149 ; ♀ 134, 136, 138, 140, 141, 142, 142, 142, 145, 145, 145, 146, 146 ; *imm.* unsexed, 141 mm.

The males have the cheeks ochre, in the females they are cinnamon, and in the immature male birds they show a transition from cinnamon to ochre. Mountain form. The most common woodpecker in old forest from 1000–1500 M. Never seen outside the forest.

Contents of stomach : insects, chiefly ants.

144. *Chloropicoides rafflesii rafflesii* (Vigors).

Gauropicoides rafflesii rafflesii R. & K., II, p. 96.

♀. Balun, Muara Labu, Padang Highlands, 480 M.

♂, 2 ♀. Muara Kiawai, Ophir Districts, 40 M.

♂. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

Iris chestnut or brownish crimson, upper mandible black, lower lead-colour, tip black, feet dirty dark olive brown.

Wings, ♂ 137, 142 ; ♀ 134, 142, 143 mm.

145. *Dryobates moluccensis moluccensis* (Gm.).

Iyngipicus auritus R. & K., I, p. 145; R. & K., II, p. 98.

♂, 2 ♀. Fort de Kock, Padang Highlands, 920 M.

♂. Aur, Kumanis, Padang Highlands, 200 M.

♀. Singkarak, Padang Highlands, 400 M.

Iris dark brown, pale brown or greyish pink, bill horn black, lower mandible paler with tip black.

Wings 75, 78 ; ♀ 76, 76, 78 mm.

The female No. 3922 (21st April) had developed ovaries.

Does not occur above 1000 M. altitude, lives in open country, secondary forest, plantations and gardens, never in old forest.

146. *Blythipicus rubiginosus* (Swainson).

Lepocestes rubiginosus R. & K., I, p. 145.

♀. Sungei Kumbang, Korinchi, 1400 M.

♂, ♀. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

♂. Air Njurus, Mt. Dempo, Palembang, 1400 M.

♂. Pasumah, Mt. Dempo, Palembang, 900 M.

Iris dark crimson or dark brownish red, bill dark yellow, base greenish yellow, feet dirty greenish slate, claws horn black.

Wings, ♂ 113, 114, 115 ; ♀ 118, 119 mm.

A female (21st August) had developed ovaries.

A mountain form, only found in dense forest.

147. *Meiglyptes tristis micropterus* Hesse.

Meiglyptes tristis grammithorax R. & K., II, p. 98 ; R. & K., III, p. 97.

- ♂. Aur, Kumanis, Padang Highlands, 200 M.
- ♀. Andalas, Tandjung, Padang Highlands, 720 M.
- ♂ subad. Balun, Muara Labu, Padang Highlands, 480 M.
- 2 ♂, ♀. Muara Kiawai, Ophir Districts, 40 M.
- ♂. Talang Ampat, Bencoolen, 40 M.

Iris dark brownish crimson, bill black, feet dirty greenish sepia, claws black.

Wings, ♂ 87, 88, 89, 92 (worn), 94, 96 ; ♀ 94, 95 mm.

In secondary and old forest up to 800 M.

148. *Meiglyptes tukki tukki* (Lesson).

R. & K., I, p. 146.

- ♀. Muara Kaiwai, Ophir Districts, 40 M.
- ♀. Talang Ampat, Bencoolen, 40 M.
- ♀. R i m b o Pengadang, Lebong, Bencoolen, 1000 M.
- ♂. Pasumah, Mt. Dempu, Bencoolen, 1000 M.

Iris dark crimson, upper mandible horn black, lower slaty with a bluish green hue, feet dull greenish brown, claws horn black.

Wings, ♂ 97 ; ♀ 97, 99, 101 mm.

149. *Micropternus brachyurus badius* (Raffles).

- ♂ (*imm.*), 3 ♀. Muara Kiawai, Ophir Districts, 40 M.
- ♂, ♀. Mt. Talamau, Ophir Districts, 300 M.
- ♂. Air Njuruk, Mt. Dempu, Palembang, 1400 M.

Iris dark chestnut or dark brownish crimson, orbital skin slaty grey, bill dull black, base of lower mandible lead-colour, feet dirty dark olive brown.

Wings, ♂ 105 (*imm.*), 112, 113 ; ♀ 107, 113, 113, 116 mm.

The species occurs in swampy littoral forest as well as in the mountain forest up to 1400 M.

A female (29th May) had developed ovaries.

Contents of stomach : insects and their larvae, especially ants.

150. *Dinopium javanense javanense* (Ljung).

Tiga javanensis R. & K., I, p. 147 ; R. & K., II, p. 99 ; R. & K., III, p. 97.

Dinopium javanensis palmarum Stresemann, Arch. f. Naturgesch., 87, 1921, p. 93 (Sumatra).

♂, ♀. Fort de Kock, Padang Highlands, 920 M.

♂, ♀. Aur, Kumanis, Padang Highlands, 200 M.

♂. Baso, Padang Highlands, 900 M.

Iris chestnut or brownish dark crimson, upper mandible black, blackish at the gape, lower mandible bluish slate, tip black, feet dirty dark olive, claws blackish.

Wings, ♂ 125, 135, 137 ; ♀ 130 (worn) 134 mm.

A female (27th February) had a developed ovary.

This species is common from the coast up to 700 metres where cocopalms grow abundantly ; higher up where these trees are rarer it is less numerous ; above 1000 metres it does not occur. It is a noisy bird with a very piercing call, frequenting plantations in open country. Not to be found in the forest.

151. *Chrysocolaptes validus xanthopygius* Finsch.

R. & K., I, p. 148 ; R. & K., II, p. 100.

♂, 3 ♀. Muara Kiawai, Ophir Districts, 40 M.

♀. Penatai, Korinchi, 300 M.

♂, 1 sex uncertain. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

Iris chestnut or dark yellow, orbital skin pale blackish brown, upper mandible pale sepia brown, tip light transparent brownish yellow, lower mandible yellowish horn, feet brownish yellow, in the female dirty sepia, claws blackish brown.

The immature bird had the iris dirty yellow, and the feet blackish.

Wings, ♂ 148, 153 ; ♀ 152, 152, 154, 155 ; sex uncertain 157 mm.

The collector states that a bird in female plumage with a very faint tinge of yellow on the back is a young male. We doubt it.

Lives only in old forest, from the swampy littoral forest up to 1000 M.

152. *Hemicercus concretus coccometopus* (Reichenbach).

R. & K., II, p. 100.

♂. Balun, Muara Labu, Padang Highlands, 480 M.

♀. Muara Kiawai, Ophir Districts, 40 M.

2♂, ♀. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

Male : iris reddish brown or dark crimson, upper mandible horn black, lower slate, tip horn black, feet dirty dark greenish yellow.

In the female the bill is entirely dark slate and the feet blackish.

Wings, ♂ 82, 83, 83 ; ♀ 83, 84 mm.

Two of the males retain in part the ochraceous crown of immaturity.

153. *Sasia abnormis abnormis* (Temm.).

Sasia abnormis abnormis R. & K., II, p. 101.

2♂. Balun, Muara Labu, Padang Highlands,
480 M.

Iris crimson, orbital skin purplish crimson, upper mandible horn black, lower lemon or pale greenish yellow, tip brownish, feet dark yellow or reddish brown, claws reddish brown.

Wings, ♂ 52.5, 53 mm.

Lives in the undergrowth of secondary jungle and bush. Not common.

154. *Picumnus innominatus malayorum* Hartert.

♂. Sungei Kumbang, Korinchi, 1400 M.

Iris sepia brown, upper mandible horn black, lower lead-colour, tip horn black, feet and claws lead-colour.

Wing 57 mm.

A rare species met in the dense forest travelling amongst a mixed flock of other birds as *Dissemurus*, *Sitta*, *Pericrocotus* and others.

EURLAIMIDAE.

155. *Calyptomena viridis viridis* Raffles.

♀. Mt. Talamau, Ophir Districts, 800 M.

♀. Balun, Muara Labu, Padang Highlands, 480 M.

♂. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

Male : iris black (very dark brown), upper mandible greenish sepia, lower mandible dull olive, feet dirty olive.

The female has the upper mandible black, tomia yellowish green, lower mandible greyish green, tomia yellowish green, tip yellow.

Wings, ♂ 93 ; ♀ 97, 97 mm.

Contents of stomach : fruits.

Lives in dense forest.

156. *Psarisomus dalhousiae psittacinus* (S. Müll.).

R. & K., I, p. 149.

♂, 2♀, ♀ imm. Andalas, Tandjung, Padang Highlands, 720 M.

♂. Sungei Kumbang, Korinchi, 1400 M.

♂, 2♀, 2♀ imm. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

♂, ♂ imm., ♀ imm. Suban Ajam, Redjang, Bencoolen, 1200 M.

3 ♂, 2 ♂ imm., ♀. Air Njuruk, Mt. Dempu,
Palembang, 1400 M.

Iris very variable : iridescent green, or iridescent pink mixed with green, or greyish brown, or grey with yellowish grey inner ring, or greenish grey, upper mandible yellowish green, tip light blue, lower mandible chrome, base, tomia and tip yellowish green, feet dull yellowish green.

The immature birds have the upper mandible blackish or blackish with a green cast, tomia yellowish green, lower mandible light greyish green.

Wings of adults ♂ 90 (worn), 97, 97, 98, 100, 101 ;
♀ 93, 95, 96, 99, 99 ; immature 94-97 mm.

Tails of some adults 143, 145, 145, 148, 148, 151, 153,
160.

Young birds have the crown green, or green and black and the throat greenish yellow.

157. *Serilophus lunatus intensus* Robinson and Kloss.

R. & K., I, p. 150.

♂, ♀, 1 sex inc. Rimbo Pengadang, Lebong,
Bencoolen, 1000 M.

3 ♂, ♂ imm., ♀. Air Njuruk, Mt. Dempu, Palembang, 1400 M.

Iris iridescent emerald green, orbital skin greenish yellow, bill greenish blue with a greyish tint, nostrils and base chrome yellow, feet yellowish green, soles yellow, claws blackish.

The immature bird has the iris pinkish grey, the bill dark sooty with a greenish cast, the basal part chrome yellow, the feet brownish yellow with a greenish cast.

The three birds from Rimbo Pengadang had a sapphire-blue iridescent iris, orbital skin pale yellow, bill horn black, nostrils and base chrome yellow.

The colour of the iris is subject to changes if it is exposed to the light ; the same may be observed in *Cymborhynchus macrorhynchus*.

Wings, ♂ 81, 81, 82, 82, 84 ; ♀ 83, 85, 86 mm.

A bird of the dense forest.

158. *Eurylaimus javanicus harterti* van Oort.

R. & K., II, p. 102.

♂, ♀. Rimbo Pengadang, Lebong, Bencoolen,
1000 M.

Iris sapphire-blue, upper mandible dark turquoise blue with a submarginal band of pale green, tomia black, lower mandible turquoise blue, tomia black, feet lilac grey, claws blackish.

The female (which is probably immature) had the iris greyish blue, the bill the same as the male except for the dark parts which were blackish.

Wings, ♂ 103 ; ♀ 101 mm.

The common Sumatran form ; an immature bird from the Lampongs in the Buitenzorg Museum appears to represent the typical race found in Java with pure yellow undertail-coverts.

159. *Eurylaimus ochromalus ochromalus* Raffles.

R. & K., I, p. 151.

♂, ♂ juv., ♀. Balun, Muara Labu, Padang Highlands, 480 M.

♂. Serapei, Korinchi, 800 M.

♂. Pasumah, Mt. Dempu, Palembang, 900 M.

Iris sulphur yellow, upper mandible pale green, basal half turquoise blue, at the base of the culmen indigo blue, tomia blackish, lower mandible turquoise blue, base indigo blue, tomia blackish, gape pale yellow, feet pale vinaceous pink (or flesh pink, same colour as the feathers of under surface), claws blackish.

Wings, ♂ 79, 81, 81 ; ♀ 83 mm.

The young male is dark brown above, black in parts ; with the same yellow markings as in the adult, but with the white collar tinged with yellow and with large yellow frontal patches. Below it is yellowish white to yellow with the grey bases of the feathers showing on breast and flanks. The under-tailcoverts are sulphur yellow.

Lives in the bushes at the edge of clearings, in dense forest and in secondary forest.

160. *Corydon sumatranus sumatranus* (Raffles).

♂. Tulas, Muara Kiawai, Ophir Districts, 40 M.

♂, 2 ♀ imm. Penatei, Korinchi, 300 M.

♂, 2 ♂ subad., ♀. Serapei, Korinchi, 800 M.

2 ♂, ♀. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

Iris dark brownish crimson, orbital skin raw flesh colour, colour of the bill very variable, upper mandible yellowish horn stained with raw flesh colour, tomia and culmen greyish claret, lower mandible raw flesh colour, base yellowish horn, tomia greyish claret, bill interiorly pinkish flesh, feet brownish black, soles dirty whitish, claws horn black.

In the immature birds the iris is brownish grey, the bill is pale pinkish horn with vinaceous stains, interiorly chrome yellow.

The two subadult specimens had the upper mandible dark sepia, tip yellowish horn.

Wings, ♂ 129 (subad.), 133 (subad.), 132, 135, 135, 138, 142 ; ♀ 133 (mm.), 134 (mm.), 136, 138 mm.

Contents of stomach : insects.

It lives at the edge of the dense forest and is not very lively.

The subadult birds have crown, wings and tail largely dark brown. The young birds are dark brown, darkest on crown, wings and tail, and have the foreneck white sullied with brown.

161. *Cymborhynchus macrorhynchus lemniscatus*
(Raffles).

♂, 2 ♀. Buo, Padang Highlands, 280 M.

2 ♂. Aur, Kumanis, Padang Highlands, 200 M.

♀, ♂ juv., 2 ♀ juv., ♀ (?) nestling. Balun, Muara Labu, Padang Highlands, 480 M.

♂, ♀. Muara Kiawai, Ophir Districts, 40 M.

♂. Air Taman, Mt. Ophir, 300 M.

♂. Bencoolen town.

♂, ♀. Pasumah, Mt. Dempu, Palembang, 900 M.

Iris iridescent emerald green golden (if the living bird is kept for some time in the dark, the iris takes a purplish pink colour and only a narrow inner ring remains emerald), upper mandible turquoise blue, lower chrome yellow, base verditer green, tomtia and tip turquoise blue, feet dark greyish cobalt, claws blackish.

In immature birds the iris is bronze colour, the upper mandible blackish with dirty bluesish base, lower mandible dirty blue.

Measurements in the flesh :

Wings of adults : ♂ 101, 101, 103, 103, 104, 105 ; ♀ 99, 100, 100, 102, 104 ; immature, 99, 99, 99, 99 ; nestling, 91 mm.

The young birds are brownish black above and the white scapulars are shorter with rounded, instead of pointed tips : the wing coverts are spotted with white and the chin and throat are brown.

In the nestling the black upper parts of the adult are replaced by brown, the crown is blackish, there are a few buff spots above the broken red of the rump : the wing coverts are spotted with white. Below there are a few dull red feathers on breast and abdomen, the tail coverts are dull red : the remaining lower parts are brown and the black gorget is indicated by a few stiff pin feathers.

Contents of stomach : insects.

The bird lives in secondary forest, on the edge of clearings and near villages.. It is not shy at all for I saw their nests made in the trees of a road, another at the outskirts of a village overhanging a pond. The nest is globular with as entrance a hole on one side. If the bird is sitting on its eggs the blue and yellow bill is seen before the entrance-hole. The nest is attached to a thin twig, sometimes not higher than three metres from the ground. A nest I inspected contained three eggs.

PITTIDAE.

162. *Pitta cyanoptera* Temm.

♀. Fort de Kock, Padang Highlands, 920 M.

Iris brown, bill brownish black, feet brownish fleshy.

Wing 123 mm.

163. *Pitta venusta venusta* S. Müll.

R. & K., I, p. 153.

♂ imm. Rimbo Pengadang, Lebong, Bencoolen,
1000 M.

3 ♂, ♂ juv., ♀ imm. Suban Ajam, Mt. Kaba,
Bencoolen, 1200 M.

2 ♂. Air Njuruk, Mt. Dampu, Palembang, 1400 M.

♂. Mt. Talamau, Ophir Districts, 1300 M.

Iris dark greyish brown, bill black, feet lead colour.

The immature bird has the iris dark grey, the bill black with minium red tip, gape and interior, feet pinkish grey.

Wings 88, 89, 90, 90, 93 mm.

The highest altitude at which I found this bird was 1400 M.

Contents of stomach : insects and small snails.

The young birds (wings 77, 82, 86) are brown, the two younger salmon and pinkish tawny on the abdomen, the other with some red on the rump and some red patches on the abdomen. The younger bird has the blue post orbital stripe of the adult indicated by a line of buffy feathers.

164. *Pitta sordida cucullata* Hartl.

R. & K., II, p. 101.

2 ♂. Buo, Padang Highlands, 280 M.

Iris black, maxilla black, mandible brownish black, feet grey.

Wings, 108, 109 mm.

165. *Pitta nipalensis schneideri* Hartert.

R. & K., I, p. 152, pl. VI.

♂. Sungei Kumbang, Korinchi, 1400 M.

2 ♂, ♀, 2 ♂ imm. Suban Ajam, Mt. Kaba, Bencoolen, 1200 M.

2 ♂. Air Njuruk, Mt. Dampu, Palembang, 1400 M.

Male : iris sepia brown, bill brownish black, tip paler, base pinkish brown, feet and claws greyish pink.

The female has the bill pale sepia, and immature birds have the bill greyish black with paler tip.

Wings, ♂ 117, 117, 118, 120, 123 ; ♂ imm. 108, 109 ; ♀ 123 mm.

Inhabits the undergrowth of old forest.

The figure of the male given by us in Journ. F.M.S. VIII, pt. 2, pl. VI, has the collar and flanks too brightly coloured.

The young bird (also figured) assumes the chestnut and blue of the upper parts in patches and when these colours appear the breast and abdomen, previously apparently blackish brown with white spots, gradually change to the brownish ochre of the adult.

HIRUNDINIDAE.

166. *Hirundo rustica gutturalis* Scop.

R. & K., I, p. 154.

2 ♂. Fort de Kock, Padang Highlands, 920 M.

♀. Air Bahar, Mt. Dempu, Palembang, 1200 M.

Iris dark ; bill black, base of mandible brownish ; feet blackish brown.

Wings, ♂ 110, 110 ; ♀ 110 mm.

167. *Hirundo javanica javanica* Sparrm.

2 ♂. Fort de Kock, Padang Highlands, 920 M.

♀. Sandaran Agung, Korinchi, 733 M.

Iris dark, bill black, feet blackish.

Wings, ♂ 103, 105 ; 103 mm.

These specimens are scarcely adult and are badly prepared. It is improbable that Sumatran birds differ from those of Java and the southern half of the Malay Peninsula which are inseparable (wings 100–107 mm.). In our opinion, therefore, *H. j. domicola* Jerdon, of Southern India, does not (as suggested by Oberholser, Bull. U. S. Nat. Mus. No. 98, 1917, p. 33) extend to Malaysia.

MUSCICAPIDAE.

168. *Alseonax latirostris* (Raffles).

♀. Fort de Kock, Padang Highlands, 920 M.

♂. Koto Tuo, Mt. Singgalang, Padang Highlands, 1000 M., 11th March, 1917.

Iris black, upper mandible brownish black, lower pale brownish yellow, tip brownish black, feet brownish black.

Wing, ♂ 67 ; ♀ 69 mm.

A winter visitor.

169. *Cyornis concreta concreta* (S. Müll.).

♂, ♂ imm. Rimbo Pengadang, Lebong, Bencoolen, 1000 M. (No. 4732).

♀ imm. Muara Sako, Indrapura, 300 M.

Iris dark, bill horny black, feet plumbeous.

Immature birds have the tip of the bill yellowish brown and the feet pinkish slate.

Wings, ♂ 89, 90 ; ♀ 87, 87 mm.

The young male has the blue duller, head and nape interspersed with brownish feathers with pale shaft stripes, wing coverts tipped with yellowish buff. The young female is like the adult except that the head, mantle and wing coverts have large fulvous centres.

Sumatran and Malayan birds are alike ; but the Bornean bird is smaller and has no white on the tail : it is *C. c. everetti* Sharpe.

170. *Cyornis elegans elegans* Temm.

Cyornis cantatrix R. & K., I, p. 154 ; R. & K., II, p. 104.

♀. Muara Kiawai, Ophir Districts, 40 M.

Iris dark, bill black, feet brown.

Wing 72 mm.

171. *Cyornis* sp. incert.

♂. Muara Kiawai, Ophir Districts, 40 M. (No. 4731).

Iris dark brown, bill black, feet purplish fleshy.

Wing 73 mm.

This bird agrees with the male from Batang Kwis, near Medan, N. E. Sumatra (which we have examined) recorded as *Cyornis nigrigularis* by de Beaufort and de Bussy (Bijdr. t. d. Dierk. Afl. XXI, p. 259). It differs, however, from ten Sarawak birds which we regard as Everett's form in lacking the blue-black areas on the sides of the breast and in having the abdomen and under-tail coverts white, the flanks alone being of the colour of the foreneck. The disposition of colours is as in the female of *Cyornis elegans* (a specimen of which was taken at the same place and time by Mr. Jacobson) but the tints are darker while the throat and sides of the neck are black.

Cyornis nigrigularis Everett, is probably synonymous with *Schwaneria caerulea* Bp., also from Borneo ; as is also *Cyornis rufifrons* Wallace, from the same island.

***Cyornis vanheysti*, Robinson and Kloss (Plate IX).**

R. & K., II, p. 104.

♂ ad. (type). Toentoengan, Deli, N. E. Sumatra, 10th February, 1918.

♂ imm. Deli Toewa, Deli, N. E. Sumatra, 4th April, 1917.

Though these birds were not collected by Mr. Jacobson we take the opportunity of figuring the only specimens at

present known an adult male (the type) and an immature male. As noted in the original description, it is, however by no means improbable that the species will prove to be identical with *Cyornis ruecki* Oustalet, Bull Soc. Philomath. (7) V, p. 78, 1881, from Kessang, Malacca of which the types are unique in Paris. Possibly they are erroneously localized.

172. *Anthipes solitaria solitaria* (S. Müll.).

R. & K., I, p. 156.

2♂, 4♀. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

Iris very dark brown, bill horn black, lower mandible slightly paler, feet pale purplish pink.

Wings, ♂ 63, 65; ♀ 61, 63, 64, 65 mm.

173. *Niltava vivida sumatrana* Salvad. (Pl. IX).

R. & K., I, p. 157.

♂. Mt. Talamau, Ophir Districts, 2400 M.

♀. Air Sarasah, Mt. Talamau, Ophir Districts,

1850 M., 12th June, 1917. (No. 1086), Pl.

fig.

Iris dark, bill black, feet brownish black.

Wings, ♂ 80, 81; ♀ 79 mm.

We have compared these and many other specimens from Sumatra and three from the Malay Peninsula with paratypes of *Cyornis vivida*, Swinh. (Ibis, 1864, p. 63) from Formosa. The only differences we can detect are a slightly larger size in the Sumatran and Malayan birds, which have the orange of the under parts with less of a chestnut tinge and not running up into the throat in a point as it does in the Formosan birds. Both the Malayan and Tenasserim bird *C. oatesi* Salvad., can therefore only be regarded as not very distinct subspecies.

174. *Niltava grandis decipiens* Salvad.

R. & K., I, p. 157.

2♂. Mt. Talamau, Ophir Districts, 1100 M.

♂, ♀. Alahan Pandjang, Padang Highlands, 1500 M.

6♂, 3♀, ♂ juv. Suban Ajam, Mt. Kaba, Bencoolen, 1000 M.

2♂, 2♀. Air Njuruk, Mt. Dempu, Palembang, 1400 M.

Male: iris very dark brown, bill black, feet blackish. The female has the bill blackish brown, with the base of the lower mandible paler, feet bluish slate with a brownish cast.

The immature male had the bill brownish black and the feet sepia.

Wings, ♂ 91, 92, 92, 93, 94, 95, 95, 95, 97, 98 ; ♀ 90, 91, 91, 92, 94, 96 mm.

The young bird (wing 96) is beginning to assume the blue colour on mantle wings and tail ; but the contour feathers are brownish black spotted with tawny, the latter colour predominating on the throat and abdomen.

Contents of stomach : insects and fruits, which latter food was found on both the occasions the stomachs of this species were examined. One of them contained fruit seeds, coleoptera and a *Sphingid* caterpillar. The bird lives in dense forest and on some mountains is fairly numerous.

175. *Erythromyias dumetoria muelleri* (Temm.).

♂. R i m b o Pengadang, Lebong, Bencoolen, 1000 M.

♀. Suban Ajam, Redjang, Bencoolen, 1200 M.

Iris dark, bill sepia brown, feet pinkish flesh.

Wings, ♂ 61 ; ♀ 56 mm.

The male shows no trace of the postocular white streak present in nearly all of a large series of Malayan specimens and in three Bornean birds.

Obtained in old forest.

176. *Poliomyias mugimaki* (Temm.).

R. & K., I, p. 158.

♀. Koto Tuo, Mt. Singgalang, Padang Highlands, 1000 M., 11th March, 1917.

Iris black ; maxilla blackish brown ; mandible sepia brown, base pinkish fleshy ; feet sepia brown.

Wing 72 mm.

Shot in secondary forest. A migrant in Malaysia.

177. *Dendrobiastes hyperythra malayana* (Grant).

R. & K., I, p. 159.

3 ♂. Mt. Talamau, Ophir Districts, 1200 M.

♂, 3 ♀. Air Sarasah, Mt. Talamau, 1850 M.

3 ♂ ad., ♂ subad., 2 ♂ juv., 2 ♀ juv. Sungei Kum-bang, Korinchi, 1400 M.

♂ juv., ♀ subad. Air Njuruk, Mt. Dempu, Palembang, 1400 M.

♂. Air Gaung Ketjil, Mt. Dempu, 1800 M.

♂. Mt. Dempu, 2200 M.

Male : iris very dark brown, bill black, feet purplish grey. The female has the bill blackish brown.

The immature birds have the bill blackish brown with a yellowish brown tip to the lower mandible, feet yellowish brown.

Wings, ♂ ad. 57, 58, 58, 58, 59, 60, 60, 60 ; ♀ ad. 54, 56, 57 mm.

The colour of the underparts of males varies considerably.

The young birds are dull brown, striped and spotted with buffy as in most young fly-catchers.

Contents of stomach : insects, as Diptera, a green caterpillar, etc.

Lives at an altitude from 1000–1850 M. in the dense forest, usually creeping about in the low undergrowth and never high above the ground ; at the altitude of 1850–2200 M. where the trees have a more dwarfed character it is to be found in the thick bush which at that level covers the ground. The birds are very tame and confiding in their habits ; they usually visited our camp in pairs, flitting about on the fallen timber a yard or two before my feet, which made it very difficult to shoot them without blowing them to pieces.

178. *Muscicapula melanoleuca westermanni* Sharpe.

R. & K., I, p. 160.

♂. Alahan Pandjang, Padang Highlands, 1500 M.

♂. Suban Ajam, Mt. Kaba, Bencoolen, 1200 M.

♂ juv. Air Njuruk, Mt. Dempo, Palembang, 1400 M.

Iris bill and feet black.

Wings 56 (juv.), 57, 58 mm.

179. *Cyanoptila cyanomelana cumatilis* Thayer & Bangs.

Cyanoptila bella R. & K., III, p. 98.

♀. Fort de Kock, Padang Highlands, 930 M.

Iris dark, bill yellowish horn, culmen and tip black, feet greyish black.

Wing 94 mm.

180. *Zanthopygia narcissina xanthopygia* (A. Hay).

♂. Fort de Kock, Padang Highlands, 920 M., 12th January, 1914.

Bill black, base of lower mandible whitish, feet blackish.

Wing 69 mm.

Met with in secondary forest, plantations and gardens : rare in the Padang Highlands.

A migratory species not hitherto recorded from Sumatra.

181. *Hypothymis azurea prophata* Oberholser.

R. & K., I, p. 162.

♀. Mt. Talamau, Ophir Districts, 500 M.

♂. Muara Kiawai, Ophir Districts, 40 M.

♂, 2 ♀. Balun, Muara Labu, Padang Highlands, 480 M.

♂. Kumanis, Padang Highlands, 200 M.

♀. Penatei, Korinchi, 300 M.

♂. Muara Sako, Indrapura, 300 M.

Iris very dark brown (black), bill cobalt, light green inside, tomia and tip black, feet slaty blue, claws black.

Wings, ♂ 67, 69, 70, 75 ; ♀ 65, 67, 69, 70 mm.

A female (24th July) had well developed ovaries.

Contents of stomach : insects.

182. *Rhipidura albicollis atrata* Salvad.

R. & K., I, p. 162.

♂. Mt. Talamau, Ophir Districts, 1400 M.

♂ imm., 1 ad. unsexed. Alahan Pandjang, Padang Highlands, 1500 M.

♂ imm. Mt. Singgalang, Padang Highlands, 1200 M.

♂, ♂ imm., ♀. Sungei Kumbang, Korinchi, 1400 M.

♀ imm. Suban Ajam, Mt. Kaba, Bencoolen, 1200 M.

♂, ♂ imm., ♀. Air Njuruk, Mt. Dempu, Palembang, 1400 M.

♂. Mt. Dempu, Palembang, 2200 M.

Iris very dark brown, bill black, base of lower mandible brownish, feet blackish.

Wings, ♂ 76, 79, 82, 83 ; ♀ 75, 79 ; sex inc. 83, immature birds 72-78.

Immature birds lack the white on the throat, the colour being confined to a narrow band across the foreneck : they are browner, less grey than adults and have many feathers tipped with fulvous.

A mountain form, living in old forest and ascending in isolated pairs to 2200 metres, where the forest is thinning out.

A lively bird with jerky movements. It often heads the mixed flocks of birds, so often met in the forest.

183. *Rhipidura perlata* S. Müll.

♀. Muara Sako, Indrapura, 300 M.

♂, ♀. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

Iris dark, bill black, feet blackish.

Wings, ♂ 89 ; ♀ 80, 80 mm.

Lives in dense forest.

At the moment we are unable to separate Malayan and Bornean birds from the typical Sumatran form.

184. *Rhipidura javanica javanica* (Sparrm.).

3 ♂, ♀. Fort de Kock,*Padang Highlands, 920 M.

♂ imm. Singkarak, Padang Highlands, 400 M.

♀. Buo, Padang Highlands, 280 M.

Iris dark brown, upper mandible black, lower brownish black, base paler, feet blackish.

Wings, ♂ 80, 84, 85 ; ♀ 75, 76 mm.

Very common ; lives in open country, villages and gardens ; not be found in old forest.

The young male (wing 69 mm.) is paler than the adults and has much of its upper surface tipped with fulvous.

185. *Terpsiphone paradisi* (Linn.) subspp.

R. & K., I, p. 163 (?).

♂. Mt. Talamau, Ophir Districts, 1000 M. (No. 948).

♂. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

♀ imm. Pasumah, Mt. Dempu, Palembang, 900 M.

Iris very dark brown, orbits celestial blue, bill cobalt yellowish green, inside, tomlia and tip black, feet greyish blue, claws blackish.

Wings, ♂ 82, 91 ; ♀ 83 mm.

A shy bird, having a screeching loud whistle ; lives in secondary and old forest.

These specimens are in the rufous phase and their subspecific determination is difficult. From the maroon gloss on the mantle No. 948 is probably *T. p. incei* (Gould) while the others are *T. p. affinis* (Blyth).

186. *Drymophila velata caesia* (Lesson).

Philentoma velata R. & K., I, p. 163.

♀. Balun, Muara Labu, Padang Highlands, 480 M.

♂. Suban Ajam, Redjang, Bencoolen, 1200 M.

♂, 3 ♀. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

♂, ♀. Air Njুরুk, Pasemah, Palembang, 1400 M.

Iris red, bill black, feet greyish black or black.

Wings, ♂ 100, 103, 105 ; ♀ 98, 98, 99, 100, 102 mm.

Lives in old forest.

187. *Drymophila pyrrhoptera pyrrhoptera* (Temm.).

Philentoma pyrrhoptera R. & K., I, p. 164; R. & K., II, p. 106.

2 ♂, ♀. Muara Kiawai, Ophir Districts, 40 M.

Iris red, bill black, feet brownish grey or plumbeous.

Wings, ♂ 78, 83; ♀ 78 mm.

Lives in swampy forest.

188. *Rhinomyias umbratilis infuscata* (Blyth).

Rhinomyias pectoralis R. & K., III, p. 99.

♂ ad., 2 ♂ imm. Rimbo Pengadang, Lebong,
Bencoolen, 1000 M.

Iris dark, bill black, feet fleshy. Immature birds, have the maxilla brown and the mandible yellowish brown.

Wings, 86 (ad.), 71 (imm.), 70 (imm.).

The young birds have the crown and wing coverts spotted with deep buff and the flight feathers tipped with the same colour.

Lives in dense forest.

189. *Rhinomyias olivacea* (Hume).

Rhinomyias olivacea brunneicauda R. & K., I, p. 164; R. & K., II, p. 164.

♀. Mt. Talamau, Ophir Districts, 500 M.

♂. Andalas, Tandjung, Padang Highlands, 720 M.

♀, 1 unsexed. Koto Tuo, Mt. Singgalang, Padang Highlands, 1000 M.

2 ♂, ♂ imm. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

♂, ♀ imm. Suban Ajam, Mt. Kaba, Bencoolen, 1000 M.

Iris very dark brown, bill horn black, feet purplish flesh colour.

The immature birds have the iris brownish grey, the upper mandible brownish black, the lower pinkish brown with pale brown tip.

Wings, ♂ 69, 71, 72, 73, 75; ♀ 70, 70, 73; unsexed 74 mm.

Contents of stomach : insects.

Lives in secondary forest, plantations near villages in isolated clumps of trees and bushes.

With fairly large series before us from the Malay Peninsula and all the large islands we can now only distinguish one form as above.

190. *Culicicapa ceylonensis* (Swains.).

R. & K., I, p. 165.

3 ♂, 2 ♀ imm. Mt. Talamau, Ophir Districts,
1000-1700 M.

2 ♂, ♀ imm. Tanangtalu, Ophir Districts, 1000 M.

♂. Siolak Dras, Korinchi, 800 M.

6 ♂, ♀. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

2 ♂. Suban Ajam, Mt. Kaba, Bencoolen, 1200 M.

2 ♂. Air Njuruk, Mt. Dempu, Palembang, 1400 M.

♂. Pasumah, Mt. Dempu, 900 M.

Iris very dark hazel, upper mandible brownish black, lower pinkish flesh, tip and tomia brown, feet yellowish, sepia in front, soles dark yellowish.

Wings, ♂ 57, 59, 60, 61, 62, 62, 62, 62, 62, 63, 63, 63, 64, 65, 65; ♀ 59 mm. Imm. 56–61 mm.

Contents of stomach : insects.

In old forest from 800–1700 M. the most common flycatcher; living most in small flocks.

The preponderance of males is remarkable.

Young birds differ from the adults in having the colour of the underparts much paler.

Stuart Baker (*Bull Brit. Orn. Club*, XLIV, pp. 11, 12) has recently divided this species into races giving the Malaysian bird the name *C. c. meridionalis* with the type from Tung Song, Peninsular Siam, near the northern limit of the form. At the moment we are not prepared to discuss these races.

191. *Abornis superciliaris schwaneri* (Temm.).

R. & K., I, p. 168.

♂. Fort de Kock, Padang Highlands, 920 M.

♂. Palupah, Tilatang, Padang Highlands, 640 M.

♂. Suban Ajam, Redjang, Bencoolen, 1200 M.

♂. Pasumah, Mt. Dempu, Palembang, 900 M.

Iris dark brown, upper mandible horn black, tomia paler, lower mandible blackish, tip darker.

Wings, ♂ 48, 48, 54, 55 mm.

The two specimens from the Padang Highlands are rather young, but the others show that Sumatran birds belong to the Bornean race and not to the typical smaller Tenasserim form.

192. *Cryptolopha trivirgata trivirgata* (Strickl.).

R. & K., I, p. 167; R. & K., II, p. 107.

3 ♂, 3 ♀. Mt. Talamau, Ophir Districts, 1500–2100 M.

♀. Alahan Pandjang, Padang Highlands, 1500 M.

Iris dark yellowish brown, bill brownish black, lower base paler, feet plumbeous.

Wings, ♂ 58, 60, 60 ; ♀ 55, 56, 57, 58 mm.

Contents of stomach : insects, and in one case some substance which looked like vegetable matter.

Lives in small flocks in dense forest and at high altitude affects the lower trees standing isolated between the dense undergrowth.

193. *Cryptolopha grammiceps sumatrensis* Robinson and Kloss.

R. & K., I, p. 165, pl. VII, fig. 2.

♂, 3 ♀, ♂ imm., 2 unsexed. Sungei Kumbang, Korinchi, 1400 M.

2 ♂, ♀. Mt. Talamau, Ophir Districts, 1800 M.

Iris brown, upper mandible brownish black, tomia yellow, lower mandible dark chrome, feet yellowish black, soles yellowish.

Wings, ♂ 52, 52, 54, 45 (*imm.*); ♀ 50, 50, 51, 52 ; sex inc. 53, 54 mm.

The immature bird is duller in colour than the adults.

Females (18th August and 4th September) had well developed ovaries.

Contents of stomach : insects and spiders.

Lives in the lower trees and bushes of old forest.

194. *Cryptolopha muelleri* Robinson and Kloss.

R. & K., I, p. 167, pl. VII, fig. 3.

♂. Sungei Kumbang, Korinchi, 1400 M.

Iris dark ; bill dull yellow, culmen brown ; feet grey.

Wing 55 mm.

This is the second known example of *C. muelleri* and appears to agree exactly with the type judging from our description : our figure seems to be incorrect in that the mantle is grey rather than green. Both this bird and *C. g. sumatrensis* have the black markings of the heads broader and more intense than figured.

195. *Cryptolopha montis inornata* Robinson and Kloss.

R. & K., III, p. 99.

♂, ♀. Mt. Dempu, Palembang, 2200 M.

Iris sepia, bill yellow, culmen brown, feet greyish yellow.

Wings, ♂ 55 ; ♀ 51 mm.

These specimens agree with the types from the hills of Deli District.

196. *Stoporala indigo ruficrissa* (Salvad.).

R. & K., I, p. 169.

2 ♀. Mt. Talamau, Ophir Districts, 1300 M.

3 ♂, 2 ♀. Alahan Pandjang, Padang Highlands, 1500 M.

♀. Mt. Singgalang, Padang Highlands, 1200 M.

♀. Sungei Kumbang, Korinchi, 1400 M.

♀. Suban Ajam, Redjang, Bencoolen, 1200 M.

♀. Air Njuruk, Mt. Dempu, Palembang, 1400 M.

♂. Air Gaung Ketjil, Mt. Dempu, 1800 M.

Iris dark, bill, feet and claws black.

Wings, ♂ 76, 76, 77, 77; ♀ 69, 70, 70, 70, 75, 76, 76 mm.

Contents of stomach : insects and fruit.

It is remarkable that a flycatcher feeds on vegetable matter, but my observation leaves no doubt about the fact (see also *N. g. decipiens*).

197. *Stoporala thalassina thalassoides* (Cab.).

R. & K., I, p. 170.

♂ imm. Muara Kiawai, Ophir Districts, 40 M.

♀ subad. Koto Tuo, Mt. Singgalang, Padang Highlands, 1000 M.

♂. Andalas, Tandjung, Padang Highlands, 720 M.

♂. Bukit Berampang, Supajang, Padang Highlands, 1400 M.

♂. Balun, Muara Labu, Padang Highlands, 480 M.

♀. Puntian, Kumanis, Padang Highlands, 280 M.

♂, ♂ imm., ♀, ♀ subad. Rimbo Pengadang, Lebong, Bencoolen,

♂, ♀ imm. Suban Ajam, Mt. Kaba, Bencoolen, 1000 M.

♂. Pasemah, Mt. Dempu, Palembang, 900 M.

Iris dark brown, bill and feet black.

Wings, ♂ 74, 74, 75, 76, 77, 82; ♀ 69, 71, 77, 74 mm.

Young birds are much duller above than adults, greyish below with the tips of the feathers albescent.

CAMPOPHAGIDAE.**198. *Coracina sumatrensis sumatrensis* (S. Müll.).***Graucalus sumatrensis sumatrensis* R. & K., II, p. 108.

2 ♂, ♀. Muara Kiawai, Ophir Districts, 40 M.

♀. Aur, Kumanis, Padang Highlands, 200 M.

Iris yellowish cream colour, bill black, feet blackish, soles grey, claws black.

Wings, ♂ 159, 152 ; ♀ 151, 140 mm.

In swampy jungle and in secondary jungle, mostly near swamps or ponds.

199. *Coracina personata melanocephalus* (Salvad.).

Artamides melanocephalus R. & K., I, p. 170; R. & K., II, p. 168.

Graucalus melanocephalus R. & K., III, p. 100.

2 ♂ ad., ♂ imm. Sungei Kring Ulu, Korinchi Peak, 2200 M.

Iris dark crimson, bill, feet, and claws black (adults).

Wings 148, 142, 147 (*imm.*).

The immature male has the outer wingcoverts and the secondaries edged with white and only the lores, cheeks and earcoverts black ; the top of the head being bluish slaty and the foreneck like the breast. The base of the mandible is fleshy and the feet greyish black.

Comparison with a series of *normani* from Mt. Dulit, Sarawak, shows that the Bornean bird is sufficiently distinguished by never having the centre of the crown black, and by the black not extending so far down the nape as in the Sumatran bird.

200. *Lalage fimbriata culminata* (Hay).

R. & K., I, p. 173.

♂. Aur, Kumanis, Padang Highlands, 200 M.

♂. Andalas, Tandjung, Padang Highlands, 720 M.

♂. Balun, Muara Labu, Padang Highlands, 480 M.

♀. R i m b o Pengadang, Lebong, Bencoolen, 1000 M.

♂. Pasumah Estate, Mt. Dempu, Palembang, 900 M.

Male : iris black or dark sepia, bill and feet black. The female has the iris purplish brown, bill black, feet blackish.

Wings, ♂ 98, 94, 94, 92 ; ♀ 91 mm.

Lives in old forest and secondary jungle.

201. *Lalage nigra brunnescens*, Stuart Baker.

Bull, Brit. Orn. Club, XLIV, p. 13, 1923 (type locality Klang).

♀. Koto Tuo, Singgalang, Padang Highlands, 1000 M.

♂, 2 ♀. Singkarak, Padang Highlands, 400 M.

♂, ♂ imm. Balun, Muara Labu, Padang Highlands, 480 M. July.

♂, ♀. Aur, Kumanis, Padang Highlands, 200 M.

♀. Bencoolen town.

Iris dark, bill and feet black.

Wings, ♂ 87, 87, 86, 85 (*imm.*); ♀ 89, 88, 87, 87, 86 mm.

Common in open country, plantations, gardens of villages and towns.

The immature male has the head and back mingled black and brown.

We have used Stuart Baker's recently published name for this race. It is worthy of note that *L. n. timoriensis* occurs in the extreme east of Java, while in discussing the species as a whole. *Perissolalage chalepa*, Oberholser from Solombo Besar Id. E. Java Sea (Proc. U. S. Nat. Mus. 54, 1917, p. 182 requires consideration. In any event the sub-specific name for the bird hitherto known as *timoriensis* is *Lalage nigra sueurii* (Viell.), *Turdus sueurii*, Viell., Nouv. Dict., XX, 1818, p. 270 (Timor).

202. *Pericrocotus speciosus xanthogaster* Raffles.

R. & K., I, p. 171.

2 ♂. Fort de Kock, Padang Highlands, 920 M.

♂. Buo, Padang Highlands, 280 M.

2 ♂, ♀ *imm.* Andalas, Tandjung, Padang Highlands, 720 M.

♂. Penatei, Korinchi, 300 M.

♀. Serapei, Korinchi, 800 M.

♀ *vix ad.* Talang Ampat, Bencoolen, 40 M.

3 ♂, 2 ♀. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

♂, 2 ♀. Suban Ajam, Mt. Kaba, Bencoolen, 1000 M.

♂, ♀. Pasumah Estate, Mt. Dempu, Palembang, 900 M.

Iris very dark brown (black), bill and feet black. Some of the females had blackish brown bills and feet.

Wings, ♂ 87, 85, 85, 84, 84, 84, 83, 82, 82; ♀ 87, 87, 87, 85, 83, 83, 83, 82, 80, 84 (*imm.*).

The forehead, rump and underparts of the adult females vary a good deal in tint.

Five males out of nine have red patches on the outer web of the fourth primary; only one female of ten has a yellow patch in the same place.

In the race of this species occurring in Java, Bali and Lombok the scarlet of the males is replaced by deep orange.

Contents of stomach: insects, as caterpillars and coleoptera.

Wandering about, sometimes in large flocks, in old forest and secondary forest, plantations, even penetrating to the gardens of villages and towns, but always choosing rather big trees.

203. *Pericrocotus montanus* Salvad.

R. & K., I, p. 172.

♂ imm. Mt. Talamau, Ophir Districts, 2000 M.
June.

2♂, ♀. Sungei Kumbang, Korinchi, 1400 M.

Iris very dark brown, bill, feet, and claws black.

Wings, ♂ 84, 78, 80 (*imm.*); ♀ 80 mm.

The young male has the grey-black foreneck of the adult, but the bright portions of its plumage are mingled yellow and red.

204. *Pericrocotus igneus* Blyth.

R. & K., II, p. 109.

♀ imm. Talang Ampat, Bencoolen, 40 M.

Iris very dark bill and feet black.

Wing 73 mm.

205. *Pericrocotus miniatus* (Temm.).

R. & K., I, p. 173.

♂ ad., ♂ juv. Alahan Pandjang, Padang Highlands, 1500 M. August.

♂ vix ad., ♀. Air Njuruk, Mt. Dempu, Palembang, 1400 M. August.

Iris very dark brown (black), and feet black.

Wings, ♂ 85, 80 (*vix ad.*), 81 (*juv.*); ♀ 80 mm.

The young male resembles the female but has the feathers of the crown, wingcoverts, scapulars and secondaries tipped with buffy-pink. The immature male has some of the feathers of foreneck, sides of head and neck and scapulars tipped with red.

206. *Pericrocotus cinereus cinereus* Lafr.

R. & K., II, p. 109.

♂. Fort de Kock, Padang Highlands, 920 M.
December.

Iris dark brown, bill black, feet greyish black.

Wing 97 mm.

A migrant

PYCNONOTIDAE.

207. *Aegithina viridissima* (Bp.).

♂, ♀. Balun, Muara Labu, Padang Highlands,
480 M.

Male: iris dark grey, upper mandible black, tomia plumbeous, lower mandible plumbeous, feet dark bluish grey.

The female has the lower mandible and the feet pale bluish grey.

Wings, ♂ 63; ♀ 64 mm.

Lives in secondary jungle.

208. *Aegithina tiphia viridis* (Bp.).

3 ♂, 4 ♀. Fort de Kock, Padang Highlands, 920 M.

♂. Bencoolen town.

Male: iris pale grey or yellowish cream, upper mandible black, tomia pale bluish plumbeous, lower mandible plumbeous or pale bluish grey, feet and claws bluish grey. The female has the upper mandible bluish plumbeous, tomia paler, lower mandible pale bluish grey.

Wings, ♂

To be found in plantations and gardens, never in the forest.

None of the males, which are fully adult, have any black on the mantle and head. Birds of the Malay Peninsula occasionally, though rarely, have the black developed and are to be regarded as transitional between the present form and *A. t. tiphia* (Linn.).

209. *Chloropsis viridis zosterops* Vig.

♀. Aur, Kumanis, Padang Highlands, 200 M.

♀. Koto Tuo, Pajokumbuh, Padang Highlands,
320 M.

2 ♂, 2 ♀. Rimbo Pengadang, Lebong, Bencoolen,
1000 M.

Male: iris dark brown, bill black, feet bluish grey. The female has the lower mandible plumbeous or bluish grey.

Wings, ♂ 109, 100; ♀ 97, 97, 96, 95 mm.

210. *Chloropsis media* (Bp.) (Plate X).

R. & K., I, p. 174.

♂. Tanāngtalū, Ophir Districts, 1000 M.

2 ♂, ♀. Fort de Kock, Padang Highlands, 920 M.

♂. Baso, Padang Highlands, 900 M.

♀. Rimbo Pengadang, Lebong, Bencoolen,
1000 M.

2♂. Suban Ajam, Mt. Kaba, Bencoolen, 1000 M.

Iris dark brown, bill black, feet bluish grey, claws plumbeous. The females have the base of the lower mandible bluish grey.

Wings, ♂ 101, 100, 99, 99, 98, 93 ; ♀ 94, 90 mm.

Common, lives on isolated trees in open country, in plantations, village gardens, and secondary forest. Ficus-trees with ripe fruits attract them in great numbers. Peculiar to Sumatra and confined to the upland districts not being found below about 900 M.

211. *Chloropsis icterocephala icterocephala* (Less.).

♂. Muara Kiawai, Ophir Districts, 40 M.

♀. Mt. Talamau, Ophir Districts, 500 M.

♀. Aur, Kumanis, Padang Highlands, 200 M.

♀. Balun, Muara Labu, Padang Highlands, 480 M.

2♂, 2♀. Serapei, Korinchi, 800 M.

♂, ♀. Talang Ampat, Bencoolen, 40 M.

3♂, ♀. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

Iris very dark brown, bill black, feet bluish grey, with a greenish tint. The female has the lower mandible bluish grey with a blackish tip.

Wings, ♂ 89, 88, 87, 86, 86, 86, 85 ; ♀ 81, 81, 81, 80, 80, 79, 78 mm.

Contents of stomach : a grasshopper and a cricket.

Lives in secondary and old forest.

212. *Chloropsis cyanopogon cyanopogon* (Temm.).

♂. Muara Kiawai, Ophir Districts, 40 M.

♂, ♀. Balun, Muara Labu, Padang Highlands, 480 M.

♀. Koto Alam, Pajokumbuh, Padang Highlands, 320 M.

Iris brown, bill black, feet plumbeous or bluish grey. The female has the lower mandible greyish.

Wings, ♂ 85, 82 ; ♀ 78, 77 mm.

This species is comparatively rare.

213. *Chloropsis venusta* (Bp.) (Plate X).

R. & K., I, p. 174.

♂. Mt. Talamau, Ophir Districts, 1000 M.

♀. Tanangtalu, Ophir Districts, 1000 M.

♂ imm. Surian, Alahan Pandjang, Padang Highlands, 1050 M.

Iris yellowish brown, bill black, feet bluish grey with a green cast, soles yellowish, claws blackish.

Wings ♂ 72, 67 (*imm.*); ♀ 68 mm.

Contents of stomach : fruit seeds, insects, insects eggs.

This very rare species is found in old forest and at the edge of clearings. No. 957 was one of small flock of five or six birds.

This beautiful species, of which we give a figure is only known from the mountainous regions of Sumatra.

The young male resembles the female but has much less blue on forehead, earcoverts and foreneck where there are two or three dark spots : it lacks also the bright blue edge of the wing.

214. *Irena puella crinigera* Sharpe.

R. & K., I, p. 175.

♂ *imm.* Balun, Muara Labu, Padang Highlands, 480 M.

♂. Buo, Padang Highlands, 280 M.

2 ♂, ♂ *imm.*, ♀. Aur, Kumanis, Padang Highlands, 200 M. March.

♂. Andalas, Tandjung, Padang Highlands, 720 M.

♀. Muara Sako, Indrapura, 300 M.

♀. Penatei, Korinchi, 300 M.

♂. Serapei, Korinchi, 800 M.

♂, 2 ♀. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

Iris reddish brown, reddish or yellowish orange ; bill, feet, and claws black.

Wings, ♂ 124, 121, 121, 120, 119, 114, 124 (*imm.*), 119 (*imm.*); ♀ 120, 118, 118, 116, 112 mm.

This bird is locally very numerous, in other places it is totally absent. As mentioned by Robinson and Kloss it does not occur in the Korinchi Valley proper : I met it however a little more to the south in the valley of the Merangin at Sērapei and Pēnatai. Nowhere, however, is it found in such large numbers as in the valley of the Liki and the Siliti, two rivers running to the north of Korinchi Peak. At Balun, which lies in the valley of the Siliti, every evening from four to five I could observe hundreds of the birds crossing the valley, not in flocks, but singly or by twos and threes. They came out of the forest which clothes the hills enclosing the valley and using the isolated high trees standing in the valley, they crossed to the forest on the other side, where apparently they had their sleeping trees. They flew very high above the ground so that I was only able to secure a single specimen there. The species

ranges from the coast not higher than up to 800 M., being numerous at 300–500 M. Higher than 800 M. I did not see it anywhere. *Ficus* trees with ripe fruits attract it in great numbers.

We have compared the present series with a large number from Sarawak, Borneo, from which it is impossible to separate them. They are all only just distinguished from *I. p. turcosa* Walden, of Java, by a slight purplish tinge in the males and possibly by slightly smaller size.

215. *Ixos cinereus cinereus* (Blyth).

♂, ♀. Serapei, Korinchi, 800 M.

2 ♂, ♀ imm. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

Iris brown to brownish crimson, bill and feet black.

Wings, ♂ 97, 96, 92; ♀ 90, 88 (*imm.*).

In the young bird the feathers of the head are without grey tips and the white area of the throat is small.

Lives in old forest.

216. *Ixos malaccensis* (Blyth).

♀. Mt. Talamau, Ophir Districts, 400 M.

Iris brown, upper mandible brownish black, lower pale sepia, feet purplish brown.

Wing 100 mm.

Contents of stomach : seeds.

This bird lives at lower altitudes than *Ixos sumatranus* and seems to be rare.

The specimen confirms our remarks as to the occurrence of the species in Sumatra : it can be exactly matched by examples from Selangor, Malay Peninsula.

217. *Ixos virescens sumatranus* (Wardl.-Rams.).

Hemixus sumatranus R. & K., I, p. 176; R. & K., II, p. 110.

3 ♂, ♀. Tanangtalu, Ophir Districts, 1000 M.

2 ♂, 5 ♀. Mt. Talamau, Ophir Districts, 1000 M.

♂, ♀. Mt. Singgalang, Padang Highlands, 1200 M.

3 ♂, ♀. Sungei Kumbang, Korinchi, 1400 M.

♂. Pantjuran Gading, Korinchi, 1000 M.

2 ♀. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

♂. Suban Ajam, Mt. Kaba, Bencoolen, 1200 M.

♂, 2 ♀. Air Njuruk, Mt. Dempu, Palembang, 1400 M.

♂. Mt. Dempu, Palembang, 2400 M.

Iris reddish brown, bill brownish black, feet pale sepia or pale purplish sepia, or dark sepia, soles brownish yellow.

Wings, ♂ 95, 93, 93, 93, 93, 92, 92, 92, 92, 91, 90, 88, 88 ; ♀ 90, 89, 89, 88, 88, 88, 87, 87, 86, 85, 84 mm.

No. 642A, a female from Air Njuruk, is a partial albino, with a cream-coloured head, crimson eyes, bill yellowish white, culmen blackish, feet pinkish yellow.

Females, 11th May and 27th June, had developed ovaries.

Contents of stomach : chiefly fruit, in one instance I found also a spider.

Lives in old forest and at the edge of clearings in small flocks from two to six birds ; rather common at an altitude of 1000–1400 M., getting scarcer higher up, isolated pairs to be found as high as 2400 M. in the alpine scrub region.

218. *Iole olivacea olivacea* Blyth.

♂, ♀. Mt. Pasaman, Ophir Districts, 400–500 M.

♀. Air Taman, Mt. Pasaman, Ophir Districts, 300 M.

2♂. Balun, Muara Labu, Padang Highlands, 480 M.

♀. Penatei, Korinchi, 300 M.

2♀. Muara Sako, Indrapura, 300 M.

♀. Talang Ampat, Bencoolen, 40 M.

Iris greyish pale sepia, upper mandible blackish brown, lower pale greyish, feet pinkish pale sepia, claws pale sepia.

Wings, ♂ 89, 84, 82 ; ♀ 86, 85, 84, 82, 80, 80 mm.

Contents of stomach : berries, fruit of *Laportea stimulans*, insects (ants, insects larvae, etc.).

We cannot separate this series from the typical bird from the south of the Malay Peninsula.

219. *Brachypodius atriceps atriceps* (Temm.).

Micropus melanocephalus R. & K., I, p. 178; R. & K., II, p. 111.

♂. Aur, Kumanis, Padang Highlands, 200 M.

2♂ juv., ♀. Balun, Muara Labu, Padang Highlands, 200 M.

♂. Talang Ampat, Bencoolen, 40 M.

3♂, 2♀. Pasumah Estate, Mt. Dempu, Palembang,

Iris pale blue, bill and feet black, claws blackish.

The immature bird has the bill and feet blackish.

Wings, ♂ 80, 79, 78, 76, 74 ; ♀ 78, 75, 75 mm.

The immature males are much duller, more brownish olive, than adults, with much less yellow in the plumage : the crowns are only slightly darker than the mantle.

There is a slight sexual difference ; females having the abdomen and vent a trifle duller than in males.

Common, lives in secondary forest and plantations. Feeds on fruit, by preference on *Ficus*.

220. *Microtarsus melanoleucus* Eyton.

R. & K., I, p. 177.

♂. Suban Ajam, Redjang Bencoolen, 1200 M.

Iris greyish brown, bill black, feet brownish black.

Wing 82 mm.

221. *Criniger gularis tephrogenys* (Jard. and Selby).

♂. Air Taman, Mt. Pasaman, Ophir Districts, 300 M.

♀. Muara Sako, Indrapura, 300 M.

Iris brownish red, upper mandible brownish grey, lower grey with yellow tip, feet pale pinkish brown, in the female pinkish flesh.

Wings, ♂ 97 ; ♀ 90 mm.

Contents of stomach : fruit.

This bird has not hitherto been recorded from Sumatra but the pair obtained by Mr. Jacobson exactly agree with others from the Malay Peninsula.

222. *Criniger gutturalis sumatranus* Wardl-Rams.

R. & K., I, p. 178.

♂. Mt. Pasaman, Ophir Districts, 1000 M.

♂, ♀. Tanangtalu, Ophir Districts, 1000 M.

2 ♂, 2 ♀. Andalas, Tandjung, Padang Highlands, 720 M.

♂. Koto Alam, Pajokumbuh, Padang Highlands, 320 M.

2 ♂. Palupah, Agam, Padang Highlands, 640 M.

♂. Serapei, Korinchi, 800 M.

♂, ♀. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

♂. Suban Ajam, Mt. Kaba, Bencoolen, 1000 M.

Iris reddish brown or dark crimson, upper mandible blackish brown, lower grey, feet pinkish brown, soles yellowish, claws, blackish to brownish.

Wings, ♂ 115, 114, 113, 112 (imp.), 112, 112, 110, 110, 109, 107 (in moult) ; ♀ 108, 108, 106, 103 mm.

Contents of stomach : fruit. As most of the *Pocnonotidae* they are very fond of the fruit of *Laportea stimulans* L. f., the well-known tree nettle. Lives in secondary forest and plantations (a single specimen was shot in old forest at 1000 M.):

223. Alophoixus phaeocephalus phaeocephalus (Hartl.).

♀. Puntian, Kumanis, Padang Highlands, 280 M.

♂. Penatei, Korinchi, 300 M.

♂. Serapei, Korinchi, 800 M.

Male : iris dark reddish brown, upper mandible hornblack, tomia paler, lower mandible bluish grey, feet and claws yellowish pink.

The female has the upper mandible slaty grey.

Wings, ♂ 95, 94 ; ♀ 85 mm.

224. Tricholestes criniger sericea (S. Müll.).

Tricholestes criniger R. & K., II, p. 111.

♂. Mt. Talamau, Ophir Districts, 400 M.

♂. Muara Kiawai, Ophir Districts, 40 M.

2 ♂, 2 ♀. Penatei, Korinchi, 300 M.

2 ♂. Serapei, Korinchi 800 M.

♂. R i m b o Pengadang, Lebong, Bencoolen
1000 M.

Iris greyish brown, bill bluish grey, culmen and tip blackish, feet pinkish yellow brown, claws blackish.

Wings, ♂ 82, 79, 79, 78 78, 77 77, 75 ; ♀ 73, 71.

Met with in secondary jungle near old forest.

This bird is intermediate between the Malayan and Bornean forms ; it has the breast and abdomen as deep a yellow as in the former, but the throat and foreneck as white as in continental birds .

We have used Müller's name, published by Blyth (Ibis 1865, p. 48, Sumatra) on the presumption that a description is attached (the volume mentioned is not available). The forms thus regarded are:—*Tricholestes c. criniger* (Hay in Blyth) Malay Peninsula ; *T. c. viridis* (Bp.) Borneo ; and *T. c. sericea* (Müll. in Blyth) Sumatra.

But the question arises whether this species is not the Sumatran bird described by Lesson (Rev. Zool. 1839, p. 167) as *Setornis criniger*, a name no one has attempted to place. If so, the nomenclature will be as follows :—*Setornis c. criniger* Lesson, Sumatra ; *S. c. minutus* (Hartl.) Malacca ; and *S. c. viridis* (Bp.) Borneo.

225. Alcurus striatus leucogrammicus (S. Müll.) (Pl. XI).

R. & K., I, p. 178.

2♂, 2♀. Tanangtalau, Ophir Districts, 1000 M.

♂. R i m b o Pengadang, Lebong, Bencoolen,
1000 M.

♀. Suban Ajam, Mt. Kaba, Bencoolen, 1200 M.

Iris dark chrome, bill black or brownish black, feet and claws brownish black, soles yellowish brown.

Wings ♂ 88, 87, 86 ; ♀ 84, 81, 81 mm.

Lives in plantations, clearings and secondary forests and is peculiar to Sumatra.

226. *Trachycomus zeylanicus* (Gm.).

Trachycomus ochrocephalus R. & K., I, p. 179; R. & K., II, p. 111.

♂. Muara Kiawai, Ophir Districts, 40 M.

♂. Buo, Padang Highlands, 280 M.

♂, ♀. Aru, Kumanis, Padang Highlands, 200 M.

♂, ♀. Balun, Muara Labu, Padang Highlands, 480 M.

♂. Bencoolen town.

♂ juv. Pasumah Estate, Mt. Dempu, Palembang, 900 M.

Iris orange reddish brown, bill black, feet blackish to plumbeous black, claws blackish.

Wings, ♂ 123, 123, 122, 118, 118, 113, 107 (juv.); ♀ 122, 115 mm.

The crown and cheeks of the young bird are cream coloured, spotted with a few ochraceous feathers ; there is a pale brown patch on the rump, and the wings and tail are much paler and edged with light yellowish olive : the under-tailcoverts are pale greenish yellow.

The bird lives in open country in clumps of bushes, by preference near water, *e.g.* rivers, marshes or ponds. It is rather common and not very shy ; on account of its beautiful but rather too loud song it is caught on a large scale with the aid of bird lime. It feeds on fruit, especially on *Ficus* fruit and berries. Its nest, which is constructed not more than two or three metres above the ground, often on boughs overhanging the water, is remarkably small for a bird of its size, and made out of thin tendrils and roots. The material is woven as open lace work, so that the eggs can be seen from the outside ; the clutch consisting of two eggs.

227. *Pycnonotus goiaver analis* (Horsf.).

R. K., I, p. 179.

♂ ad., 2 ♂ imm., 3 ♀ ad., ♀ imm. Fort de Kock, Padang Highlands, 920 M.

♂, ♀. Bencoolen town.

♂. Rimbo Pengadang, Lebong, Bencoolen.

♂. Air Njuruk, Mt. Dempu, Palembang, 1300 M.

Iris dark sepia, bill black, feet black or blackish.

The immature bird has the bill brownish black, and the lower mandible pale greyish brown.

Wings, ♂ 92, 90, 90, 87 (*imm.*), 85 (*imm.*), 80 (*imm.*); ♀ 88, 86, 84, 84, 82 (*imm.*).

Immature birds are in general paler above, the top of the head being markedly paler brown, the pectoral band of very pale sepia feathers with whitish borders, is more or less absent in young birds. The difference in the colour of the bill is noted above.

P. analis is the most common of all the family in Sumatra, ranging from the coast up to 1400 M. It is the garden bird, but is also to be found in villages, open country, plantations, and secondary forest, but absent in old forest. Its food consists chiefly of berries and cultivated fruit. It is very fond of the ripe fruit of *Lantana camara* L., and one of the chief propagators of this plant, an introduced American species.

228. *Pycnonotus plumosus plumosus* Blyth.

R. K., I, p. 181; R. & K., II, p. 112.

♂. Koto Alam, Pajokumbuh, Padang Highlands, 320 M.

Bill black, feet brownish black.

Wing 85 mm.

A lowland species.

229. *Pycnonotus brunneus brunneus* (Blyth).

R. & K., II, p. 113.

3 ♂, ♀. Mt. Talamau, Ophir Districts, 400–500 M.

♂. Aur, Kumanis, Padang Highlands, 200 M.

♀. Andalas, Tandjung, Padang Highlands, 720 M.

♀ juv. Koto Alam, Pajokumbuh, Padang Highlands, 320 M.

2 ♂, ♀. Pasumah Estate, Mt. Dempu, Palembang, 900 M.

Iris reddish brown or orange (two birds had brownish cream irides), bill sepia brown, base of lower mandible pale sepia or pinkish sepia, feet pinkish pale sepia, claws brownish black.

Wings, ♂ 88, 87, 86, 86, 85, 84, 82, 82, 77; ♀ 80, 80, 79, 79, 78, 78 mm.

The young bird (wing 75 mm.) only differs from adults in being paler throughout.

A female (31st July) had well developed ovaries.

Contents of stomach: fruit seeds, fruit of *Laportea stimulans*, a caterpillar of a *Psychididae*.

Lives in secondary forest, at the edge of clearings and in plantations.

(The quite different colour of the iris in some birds I cannot account for; it does not seem to be the consequence of age or sex, and in plumage and other characters the specimens with the brownish cream irides cannot be distinguished from those with the reddish ones). The whitish iris is as a rule characteristic of *Pyc. simplex* (Less.), of which however, Mr. Jacobson's collection does not contain a specimen.

230. *Pycnonotus erythrophthalmos cyanochrous* Oberholser.

R. & K., II, p. 113.

♀. Andalas, Tandjung, Padang Highlands, 720 M.

3 ♀. Balun, Muara Labu, Padang Highlands, 480 M.

♂, 3 ♀. Mt. Talamau, Ophir Districts.

Iris brownish crimson, dark orange red, or terracotta brown. In one specimen (No. 4181) brownish cream (buff): the totally different colour of the iris is not the consequence of age, as the bird had well developed ovaries and therefore was fullgrown. Eyelids yellow, bill black, nostrils and gape yellowish, feet purplish pale sepia, digits darker.

Wings, ♂ 75; ♀ 76, 75, 74, 74, 73, 73, 71 mm.

Contents of stomach: fruit (berries, fruit of *Laportea stimulans*, etc.).

Lives in secondary forest, at the edge of clearings, and in plantations.

The difference in colour of the irides noted above is interesting as the colour appears in this group to have specific significance.

231. *Pycnonotus bimaculatus barat* Rob. and Kloss.

Pycnonotus bimaculatus R. & K., I, p. 180; R. & K., II, p. 112.

Pycnonotus bimaculatus barat R. & K., III, p. 103.

♂, ♀. Tanangtalu, Ophir Districts, 1000 M.

♂, ♀ imm. Mt. Talamau Plateau, Ophir Districts, 2800 M.

♂. Alahan Pandjang, Padang Highlands, 1500 M.

♀. Sungei Kumbang, Korinchi, 1400 M.

♀. Suban Ajam, Mt. Kaba, Bencoolen, 1000 M.

Iris dark brown, sometimes yellowish brown, bill black or brownish black, feet and claws black or blackish.

Wings, ♂ 93, 92, 91, 98; ♀ 88, 87, 84 imm.

A common bird of the scrub jungle at high altitudes, occurring also in secondary and rarely in old forest. This

species ranges up nearly to the limit of vegetation where it is a normal resident. I met it at about 3000 M. on Mt. Dempu, but was not able to shoot any, the birds being very shy : the only other species I saw in the same locality was *Zosterops difficilis* R. & K. On the summit of Mt. Talamau the only birds seen were this bulbul, *Zosterops montana* and *Collocalia fuciphaga*. In the alpine region it feeds on *Vaccinium* berries, but the two specimens, obtained on the plateau of Mt. Ophir (2800 M.), when there were no *Vaccinium* fruit, had the stomachs full of the seeds of *Gahnia javanica* Mor. They seem to breed there as one of the birds is young.

232. *Pycnonotus cyaniventris cyaniventris* Blyth.

Rubigula cyaniventris R. & K., III, p. 104.

♀. Rimbo Pengadang, Lebong, Bencoolen,
1000 M.

Iris dark greyish brown, bill black, feet plumbeous.

Wing 72 mm.

A rare species in my experience : met with in secondary jungle or on the edge of old forest.

**233. *Bonapartia tigus* (S. Müll.) (*Gymnocrotaphus tigus*)
(Plate X).**

Gymnocrotaphus tygus R. & K., I, p. 177; R. & K., III, p. 103.

4 ♂, ♀. Tanangtalu, Ophir Districts, 1000 M.

♂. Mt. Talamau, Ophir Districts, 1000 M.

Iris dark sepia brown, orbital skin black, bill black, feet blackish brown, soles pale sepia.

Wings, ♂ 78, 77, 77, 76, 75 ; ♀ 75 mm.

Nearly all the specimens were obtained at the wayside bordering secondary forest and scrub, a single one was shot in old forest ; usually to be met in small flocks of five or six birds.

The species is confined to the mountains of Sumatra.

234. *Rubigula dispar dispar* (Horsfield).

R. & K., p. 182.

♂. Mt. Talamau, Ophir Districts, 500 M.

♂ ad., ♂ imm., ♀. Andalas, Tandjung, Padang Highlands,

♂, 2 ♀. Balun, Muara Labu, Padang Highlands,
480 M.

5 ♂. Rimbo Pengadang, Lebong, Bencoolen,
1000 M.

3 ♂, ♀. Pasumah Estate, Mt. Dempu, Palembang,
900 M.

Iris orange red or yellowish orange, bill and feet brownish black.

Wings, ♂ 86, 83, 82, 82, 82, 81, 81, 81, 81, 81, 80, 80 (imm.), 78 ; ♀ 82, 81, 80, 80 mm.

A female (13th June) had well developed ovaries.

Contents of stomach : fruit (besides others the fruit of *Laportea stimulans*).

Lives sometimes in small flocks in secondary forest and plantations ; in some localities very numerous, in others totally absent.

The immature bird has the crown deep brown with a few glossy black feathers and the throat yellow with only a little red at the sides.

235. *Rubigula squamata webberi* (Hume).

♂ subad. Balun, Muara Labu, Padang Highlands, 480 M.

Iris pale greenish brown, bill black, feet bluish grey.

Wing 71 mm.

This individual is the only one I have seen in Sumatra. It was feeding on a *Ficus* tree.

TIMALIIDAE.

236. *Pomatorhinus montanus occidentalis* Rob. & Kloss.

Pomatorhinus borneensis R. & K., I, p. 183.

♂. Suban Ajam, Redjang, Bencoolen, 1200 M.

♀. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

Iris yellowish white, bill pale yellow, culmen black posteriorly, feet plumbeous.

Wings, ♂ 86 ; ♀ 87 mm.

In old forest.

237. *Garrulax leucolophus bicolor* Hartl.

R. & K., I, p. 183.

♂. Tanangtalu, Ophir Districts, 1000 M.

♂. Andalas, Tandjung, Padang Highlands, 720 M.

♂. Baso, Agam, Padang Highlands, 900 M.

♀. Fort de Kock, Padang Highlands, 920 M.

♂ imm. Pantjuran Gading, Barisan Mts., Korinchi, 1000 M.

♀. subad. Rimbo Pengadang Lebong, Bencoolen, 1000 M.

♂, ♂ subad., 2♀. Suban Ajam, Mt. Kaba, Bencoolen, 1200 M.

Iris purplish crimson, bare spot on lower eyelid pale greenish yellow, bill black, feet black or blackish, soles brownish yellow.

The immature bird has the feet blackish and quite young birds have them grey with blackish brown spots.

Wings, ♂ 123, 127, 129, 130, 121 (subad.), 113 (*imm.*); ♀ 127, 128, 115, 117 (subad.) mm.

Younger birds are paler and browner than adults; they have an indistinct median whitish area on the abdomen, obscured with brown, which is broadest on the immature specimen.

Very common in secondary jungle, plantations, brushwood and also, but rarer, in old forest. It travels in small flocks of six to ten birds, progressing from one tree to another with clumsy flight and never flying a great distance. The birds are very noisy, producing a great variety of whistling, crowing, scraping, and rolling sounds, which are difficult to describe. They are very curious and most aggravating to huntsmen, for as soon as they are alarmed by some strange appearance the whole party keeps up a concert of the most confounded cries, by which all the game in the neighbourhood is warned.

238. *Garrulax palliatus palliatus* (Temm.).

R. & K., I, p. 184.

2♂, ♀. Mt. Talamau, Ophir Districts, 1300–1500 M.

2♂, ♀. Tanangtalu, Ophir Districts, 1000 M.

2♂, ♀ imm. Sungei Kumbang, Korinchi, 1400 M.

2♂. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

Iris dark brown, dark crimson, dark grey, or yellowish brown, orbital skin pale bluish grey, pale greenish blue or pale blue, bill black, feet and claws slaty black, soles dirty brownish yellow.

The Korinchi female had the orbital skin yellowish blue and was yellow at the gape; apparently an immature bird.

Wings, ♂ 127, 127, 128, 128, 130, 132, 135; ♀ 123, 135, 139 mm.

Contents of stomach: fruit and insects, in one instance the bones of a lizard or frog.

The birds live in old forest and travel in small flocks, sometimes numbering a dozen or more birds. They have the same clumsy flight of the *G. bicolor* and creep along the boughs like small mammals.

The birds are shyer than *G. bicolor* and less noisy, but they produce also a great variety of sounds.

239. *Melanocichla lugubris* (S. Müll.).

R. & K., I, p. 185.

4 ♂, 5 ♀, 2 ♀ imm. Tanangtalu, Ophir Districts,
1000 M.

♀. Mt. Talamau, Ophir Districts, 1300 M.

♂. Serapei, Korinchi, 800 M.

6 ♂. Rimbo Pengadang, Lebong, Bencoolen,
1000 M.

♀. Pasumah, Mt. Dempu, Palembang, 900 M.

Iris dark brown, orbital and naked gular skin dark slaty blue, bill orange, feet sepia brown with a yellowish cast, soles dirty brown, claws brownish black.

Wings, ♂ 120, 123, 125, 125, 126, 126, 127, 128, 130, 130 ; ♀ 121, 121, 124, 125, 126, 126, 126, 111 (*imm.*), 114 (*imm.*) mm.

The immature birds are slightly tinged with brown on the back and the edges of the wing feathers are distinctly of this colour.

The Malayan bird (*M. peninsulae* Sharpe) cannot be separated.

Contents of stomach : one examined contained grasshoppers, but doubtless the bird feeds also on fruit.

Lives in flocks up to twenty birds in old forest and in secondary forest amongst the bushes.

Resembles in its habits *Garrulax palliatus* and utters also a great variety of sounds, but different from those of the other species.

240. *Rhinocichla mitrata mitrata* (S. Müll.).

R. & K., I, p. 186.

5 ♂, ♀. Mt. Talamau, Ophir Districts, 800–1700 M.

2 ♂. Fort de Kock. Padang Highlands, 920 M.

♂, ♀, 1 unsexed. Andalas, Padang Highlands,
720 M.

♀ juv. Alahan Pandjang, Padang Highlands,
1500 M.

♀. Palupuh, Agam, Padang Highlands, 640 M.

♂. Sandaran Agung, Korinchi, 733 M.

♀. Rimbo Pengadang, Lebong, Bencoolen,
1000 M.

3 ♂, ♀. Suban Ajam, Mt. Kaba, Bencoolen,
1200 M.

♂, ♀. Air Njuruk, Mt. Dempu, Palembang,
1400 M.

Iris dark brownish crimson, orbital skin pale bluish white, bill orange, feet and claws dark yellow.

Wings, ♂ 97, 98, 100, 100, 101, 101, 103, 103, 103, 107, 108, 108; ♀ 92, 94, 94, 95, 95, 96, 101 mm.

The grey of the adult is replaced by a dull greyish brown in the young bird.

The measurements of Mr. Jacobson's series confirm the greater size of the Malayan bird on account of which we have named it *R. m. major* (Bull. B.O.C. XL, 1919, p. 16).

Contents of stomach : fruit and insects.

The most common of the *Crateropodinae*, lives in large flocks in old and secondary forest, in plantations and scrub bush, where it clammers about the boughs and creepers like a mammal. The various sounds it produces are again different from those of the other species. In coffee plantations it causes some harm by devouring the ripe coffee berries.

241. *Malacocincla abbotti olivacea* (Strickl.).

♂. Buo, Padang Highlands, 280 M.

Iris chestnut, upper mandible brownish black, tip paler, lower mandible grey, feet purplish yellowbrown.

Wing 77 mm.

Lives in old forest.

Mr. Jacobson is apparently the first collector to obtain this bird in Sumatra : his specimen does not differ from Malayan birds.

242. *Malacocincla sepiaria barussana* Robinson and Kloss.

Malacocincla sepiaria R. & K., I, p. 187; R. & K., II, p. 114.

♂. Penatei, Korinchi, 300 M.

4 ♂. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

3 ♂, ♀. Suban Ajam, Mt. Kaba, Bencoolen, 1200 M.

2 ♂. Air Njuruk, Mt. Dempu, Palembang, 1400 M.

Iris brownish crimson, upper mandible hornblack, tip sometimes paler, lower mandible grey, feet pinkish grey.

Wings, ♂ 65, 69, 70, 70, 71, 71, 72, 73, 73, 75; ♀ 68 mm.

Lives in old forest.

243. *Turdinus rufipectus* Salvad.

R. & K., I, p. 187.

♂, 2 ♀. Sungei Kumbang, Korinchi, 1400 M.

3 ♂, 3 ♀. Suban Ajam, Mt. Kaba, Bencoolen, 1200 M.

2 ♂. Air Njuruk, Mt. Dempu, Palembang, 1400 M.

Iris dark brown, bill horn black, base of lower mandible blackish.

Wings, ♂ 87, 88, 91, 92, 92, 92 ; ♀ 84, 89, 90, 91 mm.

Contents of stomach : insects, small slugs, a few seeds.

Lives in old forest on the ground, and in low bushes and undergrowth.

244. *Turdinus loricatus* (S. Müll.).

R. & K., II, p. 115.

♂, 2 ♀, ♀ subad. Suban Ajam, Mt. Kaba, Bencoolen, 1200 M.

Iris yellowish reddish brown, upper mandible black, lower blackish with greyish base, feet brownish black.

The immature bird had the iris yellowish brown.

Wings, ♂ 94 ; ♀ 84 (subad.), 89, 90 mm.

The immature bird has pale shaft-stripes to the feathers of head and mantle.

Lives in old forest on the ground and in the low bushes and undergrowth.

245. *Drymocapthus capistratus nigrocapitatus* (Eyton).

R. & K., I, p. 188.

♀. Muara Kiawai, Ophir Districts.

1 sex inc. Balun, Muara Labu, Padang Highlands.

♀. Bencoolen town.

Iris brown, upper mandible black, lower pale grey, feet blackish brown.

Wings, ♀ 65, 69 ; unsexed 70 mm.

Lives in secondary forest near the ground.

246. *Aethostoma buttikoferi* (Vorderm.).

R. & K., II, p. 115 ; R. & K., III, p. 104.

♀. Balun, Muara Labu, Padang Highlands, 480 M.

♂. Palupuh, Agam, Padang Highlands, 640 M.

♀. Fort de Kock, Padang Highlands, 920 M.

♀. Bencoolen town.

Iris fawn-coloured, upper mandible sepia brown, tomia whitish, lower mandible pinkish flesh, feet yellowish pink.

Wings, ♂ 67 ; ♀ 63, 64, 66 mm.

A rare bird confined to the island of Sumatra.

247. *Horizillas magna* (Eyton).

♂. Mt. Talamau, Ophir Districts, 600 M.

2 ♂. Penatei, Korinchi, 300 M.

Iris orange red or brownish red, upper mandible blackish, tomia grey, lower mandible grey, feet and claws plumbeous, soles brownish yellow.

Wings, ♂ 88, 90 ; ♀ 91 mm.

Lives in old forest and moves along on the low plants or bushes, never high above the ground.

Malayan, Sumatran and Bornean birds are inseparable.

248. *Horizillas cinerea cinerea* (Eyton).

Setaria cinerea R. & K., II, p. 115.

♂. Air Taman, Mt. Talamau, Ophir Districts, 300 M.

♀. Muara Kiawai, Ophir Districts, 40 M.

♂. Aur, Kumanis, Padang Highlands, 1200 M.

♂. Pangkalan Kota Baharu, Pajokumbuh, Padang Highlands, 120 M.

♂. Muara Sako, Indrapura, 300 M.

Iris pale chestnut, upper mandible greyish brown to brownish black, tip whitish, lower mandible pinkish flesh with greyish tip, feet and claws pinkish flesh to purplish pale grey, digits very pale sepia.

Wings, ♂ 78, 79, 80, 81; ♀ 72 mm.

The female (31st May) had well developed ovaries.

Has the same habits as the previous species.

Sumatran and Bornean birds do not differ from topotypical Malayan examples.

249. *Horizillas magnirostris magnirostris* (Moore):

♂. Mt. Talamau, Ophir Districts, 800 M.

♀. Balun, Muara Labu, Padang Highlands, 480 M.

Iris orange (male), red (? female); maxilla greyish black, mandible grey; feet purplish grey.

Wings, ♂ 80; ♀ 76 mm.

Sumatran birds are the same as the typical Malayan form; but Bornean birds have dark grey-black crowns and are *H. m. cinereicapilla* (Salvad.) syn. *H. m. kalulongae* (Sharpe).

250. *Horizillas affinis* (Blyth).

Setaria affinis atricapilla R. & K., III, p. 105.

2♂, ♀. Muara Kiawai, Ophir Districts, 40 M.

♂. Puntian, Kumanis, Padang Highlands, 280 M.

Iris orange or greyish brown, upper mandible sooty brown, tomia grey, lower mandible grey, tomia yellowish, feet and claws pearl grey or pale purplish grey.

Wings, ♂ 68 (subad.), 74, 76; ♀ 71 mm.

Contents of stomach: insects. One examined contained the bones of a lizard.

Lives in old forest; has the same habits as the previous species.

Malayan, Sumatran and Bornean birds are all alike and there is no need, therefore, to use for these specimens the name *Napothera atricapilla* Bonaparte, 1850 (Malacca, Sumatra, Borneo) based on Sumatran material in Müller's collection.

This species may be distinguished from the forms of *H. magnirostris* by the absence of a black malar stripe.

251. *Anuropsis malaccensis malaccensis* (Hartl.).

♂. Mt. Talamau, Ophir Districts, 600 M.

♂. Aur, Kumianis, Padang Highlands, 480 M.

♂. Balun, Muara Labu, Padang Highlands, 480 M.

♂, ♀. Pasumah, Mt. Dempu, Palembang, 900 M.

Iris dark brown, reddish brown, or white; upper mandible black or blackish brown, lower mandible bluish or yellowish grey, with brownish tip, feet and claws very pale pinkish flesh.

Wings, ♂ 66, 67, 71, 72; ♀ 66 mm.

252. *Turdinulus epilepidotus dilutus* Robinson and Kloss.

R. & K., I, p. 189.

5 ♂, ♀, ♀ subad. Mt. Talamau, Ophir Districts, 1200-1300 M.

3 ♂, ♀. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

♂, ♀. Suban Ajam, Mt. Kaba, Bencoolen, 1200 M.

♂ imm., ♀. Air Njuruk, Mt. Dempu, Palembang, 1400 M.

Iris chestnut, sometimes with darker outer ring, upper mandible brownish black, lower mandible grey or grey with a brown tip, feet pale pinkish sepia.

Wings, ♂ 54, 56, 56, 57, 57, 57, 57, 58, 59; ♀ 54, 55, 57, 58 (subad.), 59 mm.

The subadult female is without the pale centres to the feathers of the cap, throat and foreneck are obscured with brown and the white stripes on the breast and median abdomen are absent. The young bird (wing 58) is without stripes above and many of the feathers are tipped with tawny.

253. *Rimator albostriatus* Salvad.

R. & K., I, p. 191.

♀. Mt. Talamau, Ophir Districts, 1300 M.
(Pl. XI).

Iris reddish brown, upper mandible hornblack, lower mandible blackish brown, the central part plumbeous, feet pale sepia.

Wing 67 mm.

Measurements in the flesh.—♀ No. 1030, total length 162, tail 42, bill from gape 33, tarsus 27.5.

Contents of stomach : Coleoptera.

This very curious bird was travelling with a small flock of *Turdinulus epilepidotus dilutus*, Rob. and Kl., amongst the low plants in the forest. It is remarkable that the appearance of this bird, except for the long bill, matches strikingly the other species it accompanied. It seems to be very rare, for it was the only specimen I observed during my four years travels.

254. *Alcippe cinerea* Blyth.

R. & K., I, p. 192.

2♂. Mt. Talamau, Ophir Districts, 700 M.

2♂. Balun, Muara Labu, Padang Highlands, 480 M.

♂. Penatei, Korinchi, 300 M.

♂. Serapei, Korinchi, 800 M.

♀. Muara Sako, Indrapura, 300 M.

♂, ♂ imm., ♀. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

Iris dark brownish grey, upper mandible dark blackish brown, tomia paler, lower mandible brownish plumbeous, feet and claws purplish flesh with a brownish tint.

The immature bird had the upper mandible blackish brown, with yellowish tomia, the lower yellowish.

Wings, ♂ 66, 67, 68, 69, 70, 70, 71 ; ♀ 67, 68 mm.

Contents of stomach : insects and spiders ; fruit and seeds.

Lives in old forest.

In the immature bird the crown and nape are browner than in the adult, the foreneck is tinged with brown, the flanks are more fuscous and the undertail-coverts are brown.

255. *Stachyris nigriceps larvata* (Bp.).

R. & K., I, p. 192.

3♂, ♀, ♂ juv., ♀ juv. Mt. Talamau, Ophir Districts, 1000–1500 M.

♂. Andalas, Tandjung, Padang Highlands, 720 M.

♂. Palupuh, Agam, Padang Highlands, 640 M.

♂, ♀. Sungei Kumbang, Korinchi, 1400 M.

♂, 1 unsexed. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

♂. Suban Ajam, Mt. Kaba, Bencoolen, 1200 M.

2♂. Air Njuruk, Mt. Dempu, Palembang, 1400 M.

The colour of the iris is very variable, chestnut with pale brown inner ring, dark grey with pale grey inner ring, pinkish brown, or cream-coloured, bill black or blackish, feet greenish grey, claws black.

Wings 57, 57, 57, 58, 58, 59, 62, 63 ; ♀ 57, 59, 60 ; sex inc. 57.

The young birds are uniform brown beneath with scarcely any indication of the black of the throat, though the white malar patches are present : the cap is dull black with no signs of the greyish white stripes.

Very common in old and secondary forest and at the edge of clearings, travels in flocks up to fifteen birds very near the ground, flying and creeping amongst the lower plants and bushes.

The nest is globular, made of dry grass and leaves with the entrance on one side ; it is placed not more than one foot from the ground.

256. *Stachyris poliocephala poliocephala* (Temm.).

R. & K., II, p. 117 ; R. & K., III, p. 105.

4 ♀. Balun, Muara Labu, Padang Highlands, 480 M.

♀ imm. Air Taman, Mt. Pasaman, Ophir Districts, 300 M.

Iris cream-coloured, upper mandible black, lower bluish grey, feet plumbeous with a greenish cast, digits darker. The immature bird had the iris slaty and the lower mandible sooty yellowish brown.

Wings 66, 66 66, 67, 65 (*imm.*) mm.

The immature bird is duller below than adults with the throat patch less developed.

Lives in secondary forest.

It is very curious that the stomach of one of these birds contained fruit, whereas the Timaliinae are known to take exclusively animal food.

257. *Stachyris maculata pectoralis* Blyth.

♂. Pasir Ganting, Indrapura.

♂, ♀. Penatei, Korinchi, 300 M.

Iris pale ochraceous yellow, orbital and gular skin pale bluish grey, upper mandible black, lower bluish dark grey, tip blackish, feet and claws bluish plumbeous.

Wings, ♂ 83, 85 ; ♀ 78 mm.

Sumatran birds agree with Malayan ones rather than with the typical Bornean form.

258. *Thringorhina striolata striolata* (S. Müll.).

R. & K., I, p. 195.

♂, ♀. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

♂. Suban Ajam, Redjang, Bencoolen, 1200 M.

♂. Air Njuruk, Mt. Dempu, Palembang, 1400 M.

Iris dark crimson, upper mandible hornblack, lower greyish, feet blackish or brownish black.

Wings, ♂ 68, 70, 70; ♀ 65 mm.

Lives in old forest near the ground.

This, the typical form of the Padang Residencies, is intermediate between the paler continental race *T. s. guttata* (Blyth) and the darker, N. E. Sumatran form *T. s. umbrosa* Kloss.

259. *Stachyridopsis chrysaea bocagei* (Salvad.).

R. & K., I, p. 193.

2 ♂, ♀. Mt. Talamau, Ophir Districts, 1200–2000 M.

♂. Tanangtalu, Padang Highlands, 1000 M.

♀. Andalas, Tandjung, Padang Highlands, 720 M.

5 ♂, ♀. Sungei Kumbang, Korinchi, 1400 M.

♂. Panchuran Gading, Korinchi, 1400 M.

♂. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

♂, ♂ imm. Suban Ajam, Redjang, Bencoolen, 1200–1400 M.

Iris red, or brown; maxilla horny; mandible grey, tip and base reddish; feet reddish brown.

Wings, ♂ 51, 52, 52, 52, 52, 53, 53, 54, 54, 55; ♀ 49, 52, 54 mm.

The young bird is duller and tinged with brown above and with green below.

260. *Stachyridopsis poliogaster* (Hume).

R. & K., I, p. 194.

♂. Muara Sako, Indrapura, 300 M.

Iris dark crimson, upper mandible brownish slate, tomtia pale brown, lower mandible greyish brown, feet pinkish pale brown.

Wing 54 mm.

We can discover no differences between Malayan, Sumatran and Bornean birds.

261. *Cyanoderma erythroptera erythroptera* (Blyth).

Cyanoderma erythroptera pyrrhoptera R. & K., III, p. 106.

♂, ♀. Balun, Muara Labu, Padang Highlands,
480 M.

♂. Bencoolen town.

Iris crimson with an outer blue ring, skin of orbits and of the entire head pale greyish blue, upper mandible black, lower plumbeous, feet pale sepia.

Wings, ♂ 58, 62 ; ♀ 58 mm.

Lives in secondary jungle near the ground.

These three birds exhibit as much variation as does a Malayan series ; two have the abdomen whitish, just tinged with brown, the third has as brown an abdomen as has the well-marked Bornean race *C. e. bicolor* (Blyth).

262. *Mixornis rubricapilla sumatrana* (Bp.).

R. & K., I, p. 196 ; R. & K., II, p. 117.

♂, ♀. Mt. Talamau, Ophir Districts, 500 M.

♂. Fort de Kock, Padang Highlands, 920 M.

♀. Padang Tarap, Agam, Padang Highlands,
740 M.

♂. Andalas, Tandjung, Padang Highlands, 720 M.

3 ♂, ♀, ♀ juv. Balun, Muara Labu, Padang Highlands, 480 M.

♂. Pangkalan Koto Baharu, Pajokumbuh, Padang Highlands, 120 M.

♂. Bencoolen town.

Iris dark yellowish brown or pale yellow, orbital skin bluish grey, upper mandible blackish with grey tomia, lower mandible greyish, bluish grey or pale plumbeous, feet brownish yellow with a greenish cast.

The young bird had blackish eyes, upper mandible brownish black, lower mandible brownish with yellowish tip and base, feet yellowish pink.

Measurements in the flesh.

Wings, ♂ 55, 56, 56, 58, 58, 58, 60, 61 ; ♀ 55, 56, 58.

The young bird (wing 50) is brown all over except on foreneck and breast which are dirty white and the median abdomen which is white.

Contents of stomach : insects (*Coleoptera*) and fruits. (*Laportea stimulans*).

Common in secondary jungle, bushes, plantations, and village gardens.

Its nest contains generally three eggs.

The Bencoolen specimen is an actual topotype of the sub-species.

263. *Macronus ptilosus ptilosus* Jard. and Selby.

R. & K., I, p. 196.

2 ♂, ♀. Muara Kiawai, Ophir Districts, 40 M.

♂ subad. Bencoolen town.

Iris dark brown, orbital skin pale bluish grey, gular skin purplish blue, bill black, feet and claws black, soles greenish dirty yellow.

The subadult bird had the lower mandible dark sepia and the feet blackish.

Wings, ♂ 69 (subad.), 69, 71 ; ♀ 69 mm.

Lives in swampy jungle and moves about in bushes, low trees and creepers not high above the ground.

The crown of the subadult bird is distinctly paler than those of the adults.

264. *Myiophoneus flavirostris dicrorhynchus* Salvad.

R. & K., I, p. 199.

2 ♀. Fort de Kock. Padang Highlands, 920 M.

♀. Muara Sako, Indrapura, 300 M.

1 sex uncertain. Suban Ajam, Mt. Kaba, Bencoolen, 1000 M.

Iris dark brown, upper mandible hornblack, tip and tomia horny yellow, lower mandible horny yellow with more or less hornblack at the base.

Wings, ♀ 158, 166, 166 ; sex inc. 160 mm.

Not met with above 1000 metres and everywhere rather scarce.

The bird is terrestrial in its habits and is to be found near watercourses at the edge of clearings, or in secondary jungle ; it ventures even as far as human habitations. I observed for a long time a bird, which every day visited the garden of one of my friends living at Fort de Kock ; it evidently came from the canyon at the brink of which the place is situated.

The bird feeds on insects and small watersnails. Every morning between six and seven o'clock and in the evening between four and five the bird comes out of the low bushes and is then seen hopping about along the banks and on the stones in the brook. During the remainder of the day it hides in dark places under thick undergrowth sitting on the lowest branches of some bush. Its call consists of three loud whistling notes, which are only heard when the bird visits the watercourses.

265. *Arrenga castanea* (Wardl.-Rams.).

R. & K., I, p. 197.

♂, ♀. Mt. Talamau, Ophir Districts, 1200–1300 M.

- ♂. Air Serasah, Mt. Talamau.
- ♀. Tanangtalau, Ophir Districts, 1000 M.
- ♀. Alahan Pandjang, Padang Highlands, 1500 M.
- 2 ♂. Panchuran Gading, Korinchi, 1000 M.
- 2 ♂, 4 ♂ subad. Suban Ajam, Mt. Kaba, Bencoolen, 1000 M.
- ♂. Air Njuruk, Mt. Dempu, Palembang 1400 M.

Iris very dark sepia brown, bill black, feet black or graphite black.

Wings, ♂ 132, 139, 140, 140, 143, 145, 147, 142 imm., 140 imm., 136 imm., 133 imm. ; ♀ 132, 132, 138 mm.

The younger males resemble the adult females except that the feathers of the breast have slightly paler centres. Somewhat older males are less blue on head and nape than adults and have the feathers of the lower foreparts dark brown indistinctly edged with blackish.

Contents of stomach : insects (*e.g. Coleoptera*, a large *Cicadidae*), in one instance fruit, and in another the hairs of a small mammal, apparently a mouse.

Lives in old forest and frequents watercourses ; during the day it hides in gullies over-grown with bushes and creepers or in dark patches of undergrowth near the brooks, perching on low branches.

In the morning between six and seven and in the evening between four and five o'clock it leaves its hiding place and comes near the water to feed ; it can then be seen along the edge of the water or on the stones projecting therefrom. Only then its call note of three clear whistling notes is sounded. The species is not so rare as its scarcity in collections would lead to suppose, which is probably due to its great shyness and retiring habits.

Possibly related to *Arrenga blighi* Holdsw. of Ceylon: otherwise a species confined to Sumatra.

266. *Arrenga glaucina melanura* Salvad.

R. & K., I, p. 198.

- 6 ♂, 6 ♀, 3 ♀ imm. Mt. Talamau, Ophir Districts, 1200-2000 M.
- ♂. Air Sarasah, Mt. Talamau, Ophir Districts, 1200-2000 M.
- ♂. Siolak Daras, Korinchi, 800 M.
- 9 ♂, 2 ♀. Sungei Kumbang, Korinchi, 1400 M.
- ♀. Sungei Kring, Korinchi, 2220 M.
- ♂ imm., ♀. Suban Ajam, Mt. Kaba, Bencoolen, 1200 M.
- 3 ♂, 2 ♂ imm., 3 ♀. Air Njuruk, Mt. Dempu, Palembang, 1400 M.

Iris dark, bill and feet black.

Wings, ♂ 114, 116, 117, 121, 122, 123, 123, 124, 124, 124, 125, 125, 126, 126, 127, 127, 128, 130, 130, 132, 111 imm., 115 imm., 120 imm.; ♀ 114, 115, 117, 119, 120, 120, 120, 120, 121, 122, 127, 113 imm., 118 imm., 120 imm.

A female from Air Njuruk has a marked wash of bright brown on primaries, flanks and abdomen. The immature birds are browner, less black throughout than the adults and have only developed the blue tip to the feathers of nape and mantle.

A female (4th September) had developed ovaries.

Contents of stomach : fruit, seeds, insects (as *Coleoptera*, caterpillars, ants, etc.).

The food is much more of a vegetable kind than in the other species of *Arrenga* and *Myiophoneus*, insects only representing a small part of the diet.

Lives exclusively in old forest, where it frequents the lower trees and bushes, and descends also to the ground in search of its food, being often caught in the snares I had put on the ground.

It is very tame and inquisitive. Often a bird followed me through the forest at close quarters for quite a distance. It is so unsuspecting that it will not fly away if a gun is levelled at it; therefore it is easily obtained, as is proved by the very large series brought together by Robinson and Kloss and also by myself.

The nest is covered outwardly with a thick layer of living mosses and mostly placed in the bifurcation of a bough against the trunk. It is therefore very hard to detect.

267. *Brachypteryx montana saturata* (Salvad.).

Heteroxenicus saturata R. & K., I, p. 200.

♂. Mt. Dempu, Palembang, 2200 M.

Iris brown, bill black, feet brownish black.

Wing 68 mm.

268. *Heteroxenicus leucophris leucophris* (Temm.).

R. & K., I, p. 201.

♀. Mt. Talamau, Ophir Districts, 1400 M.

♂. Air Njuruk, Mt. Dempu, Palembang, 1400 M.

Iris dark brown, bill blackish brown, feet dark brownish grey.

Wings, ♂ 58; ♀ 58 mm.

Contents of stomach : insects.

Lives in the dense forest.

269. *Sibia picaoides simillima* (Salvad.).

R. & K., I, p. 202.

3 ♂, 4 ♀. Mt. Talamau, Ophir Districts, 1000–1300 M.

3 ♂, 2 ♀. Sungei Kumbang, Korinchi, 1400 M.

♀. Sungei Kring, Korinchi, 1600 M.

2 ♂, 3 ♀. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

2 ♀. Suban Ajam, Mt. Kaba, Bencoolen, 1200 M.

♂. Air Njuruk, Mt. Dempu, Palembang, 1400 M.

Iris reddish brown, bill hornblack, feet graphite black, soles brownish yellow.

Wings, ♂ 106, 108, 111, 111, 116, 117, 117, 120, 120 ; ♀ 102, 107, 110, 110, 111, 111, 112, 112, 113, 115, 117, 120 mm.

Contents of stomach : fruit and fruit seeds.

Common in old forest, always in small flocks of ten to fifteen birds ; moves restlessly along the creepers and growth on the trunks of big trees much in the manner of small mammals.

In the Barisan Range between the Padang Lowlands and Korinchi I saw at an altitude of 1200 M. a mixed flock consisting of these birds and *Mesia laurinae* (Salvad.).

270. *Mesia argenteauris laurinae* (Salvad.).

R. & K., I, p. 203.

14 ♂, 5 ♀. Sungei Kumbang, Korinchi, 1400 M.

Iris dark grey, bill yellowish orange, feet and claws dark chrome.

Wings, ♂ 80, 80, 80, 81, 82, 82, 82, 83, 83, 83, 84, 84, 84 ; ♀ 78, 80, 83, 83 mm.

A female (21st August) had developed ovaries.

Contents of stomach : fruit.

I obtained this species only in Korinchi at the base of Korinchi Peak, where, according to Robinson and Kloss, it occurs up to an altitude of 8000 ft. (abt. 2400 M.): I observed it also on the highest point of the pass (+ 1700 M.) where the road from Tapan to Sungei Penoh crosses over the Barisan Range. I did not observe it either on Mt. Dempu, or on Mt. Ophir, where it does not seem to occur, for such a conspicuous bird travelling generally in considerable numbers would certainly not have escaped detection.

At Sungei Kumbang the birds were extremely numerous, especially in the marshy forest at the edge of the Danau Bento, a large swamp.

As is the case with many species of birds the males were far in the majority.

271. *Pterythius flaviscapis cameranoi* Salvad.

Pteruthius aerulatus cameranoi R. & K., I, p. 225.

♀. Mt. Talamau, Ophir Districts, 1700 M.

♂, ♀. Air Njuruk, Mt. Dempu, Palembang, 1400 M.

Iris pale grey with dark grey outer ring, upper mandible hornblack, gape and basal half of the tomia bluish grey, lower mandible bluish grey, feet purplish flesh, claws blackish.

Wings, ♂ 77 ; ♀ 76, 76 mm.

Contents of stomach : insects.

TROGLODYTIDAE.

272. *Pnoepyga pusilla lepida* Salvad.

R. & K., I, p. 204.

♂, ♀. Mt. Talamau, Ophir Districts, 1000–1300 M.

2 ♀ ad., ♂ subad. Sungei Kumbang, Korinchi, 1400 M.

2 ♂ imm. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

♂. Air Gaung Ketjil, Mt. Dempu, Palembang, 1800 M.

Iris dark ; bill blackish brown, base whitish brown, feet light brown, claws yellowish brown.

Wings, ♂ 54, 52, 52 (subad.), 52 (*imm.*), 52 (*imm.*) ; ♀ 51, 52, 53, mm.

Contents of stomach : insects.

The young birds have pale tips to the primary wing coverts, but otherwise the upper parts are unspotted : beneath they are dull brown, a few of the feathers being brownish white.

The bird lives in old forest, where it dodges about amongst the weeds and dead leaves on the ground.

In its habits much like *Turdinulus epilepidotus dilutus* but still more terrestrial. It has two kinds of call notes. The one consists of a single whistling note, not very loud, which is uttered when the bird is observing some strange appearance. It is repeated incessantly and at every note the bird slightly opens and closes its wings, at the same time turning its whole body alternately to the left or to the right.

I think that this is a warning note for its mate ; the real call note consists of three notes, and they are remarkably loud for such a small bird. If on hearing the call

note one keeps perfectly quiet the bird will approach to a distance of a few yards and remain there some time, all the while uttering its warning note. It is very difficult to obtain specimens in perfect condition, as the bird can only be seen when it is very near. I always carried some cartridges with me, with a very feeble charge, specially destined for this species and *Turdinulus e. dilutus*.

TURDIDAE.

273. *Zoothera andromedae* (Temm.).

R. & K., I, p. 206.

2♂. Sungei Kumbang, Korinchi, 1400 M.

♂. Suban Ajam, Mt. Kaba, Bencoolen, 1200 M.

Iris dark brown, bill black, feet and claws pinkish sepia, digits more greyish, soles dirty white.

Wings 128, 123, 122 mm.

This rare bird seems to lead an entirely terrestrial life, for the two specimens from Sungei Kumbang were caught in old forest in snares set on the ground and the one from Suban Ajam was shot while it was hopping along the ground amongst the undergrowth.

274. *Henicurus ruficapillus* Temm.

♂, ♀. Aur, Kumanis Padang Highlands, 200 M.

♂. Serapèi, Korinchi, 800 M.

♀. Muara Sako, Indrapura, 300 M.

Iris dark brown (black), bill black, feet and claws whitish pink.

Wings, ♂ 94, 88 ; ♀ 85, 85 mm.

Not very common, lives along streams running through secondary or old forest, moving from stone to stone in the stream. Their way of locomotion is not by hopping, but they "walk" like vagtails, putting one foot before the other. The call note is so shrill that it is heard above the turmoil of the rapids.

275. *Henicurus velatus sumatranus* Rob. and Kloss.

Henicurus velatus R. & K., I, p. 212; R. & K., II, p. 119.

5♂, 5♀. Andalas, Tandjung, Padang Highlands, 720 M.

♂, ♀. Pakupuh, Agam, Padang Highlands, 640 M.

♀. Tanangtalu, Ophir Districts, 1000 M.

♀. Serapei, Korinchi.

♂ (sexed ♀). Pantjuran Gading, Korinchi, 1000 M.

2♂, ♂ (sexed ♀). Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

♂, ♀. Air Njuruk, Mt. Dempu, Palembang,
1400 M.

Iris very dark brown (black), bill black, feet and claws whitish pink.

Wings, ♂ 77, 78, 78, 78, 78, 79, 80, 80, 81, 83 ; ♀ 75, 76, 76, 76, 76, 77, 78, 78 mm.

The most common of the genus in Sumatra ; has the same habits as the previous species, but lives also along brooks which run in open country.

276. *Henicurus frontalis* Blyth.

R. & K., I, p. 213.

♀. Puntian, Kumanis, Padang Highlands, 280 M.

One example unsexed, no exact locality.

Iris very dark brown (black), bill black, feet and claws whitish pink.

Wings 91, 93 mm.

Met with along streams in secondary forest.

277. *Notodela diana sumatrana* Robinson and Kloss.

R. & K., I, p. 215.

3 ♂ ad., ♂ imm. Air Njuruk, Mt. Dempu, Palembang, 1400 M.

♂ ad. Sungei Kumbang, Korinchi, 1400 M.

Iris dark brown, bill black, feet blackish.

Wings 86, 80, 79, 79, 79 (*imm.*) mm.

Not unnaturally mistaken by Mr. Jacobson for *Brachypteryx saturata*.

278. *Copsychus saularis musicus* (Raffles).

R. & K., I, p. 215.

4 ♂ ad., 2 ♂ imm., ♀ imm. Fort de Kock, Padang Highlands, 920 M.

♂ (?) imm. Andalas, Tandjung, Padang Highlands.

♀. Alahan Pandjang, Padang Highlands, 1500 M.

♀. Fort van der Capellan, Padang Highlands, 465 M.

♀. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

Male : iris dark brown, bill and feet black.

The female and the immature male have the feet blackish.

Wings, ♂ 109, 108, 105, 104, 102, 98 (*imm.*), 93 (*imm.*); ♀ 101, 100, 95 (*imm.*) mm.

Exceedingly common in village and town gardens, in plantations, but never in the forest.

279. *Kittacincla malabarica tricolor* (Vieill.).

Kittacincla macrura macrura R. & K., I, p. 216; R. & K., II, p. 119.

2 ♂, ♀. Andalas, Tandjung, Padang Highlands, 720 M.

♂ vix ad. Balun, Muara Labu, Padang Highlands, 480 M.

♂. Puntian, Kumanis, Padang Highlands, 280 M.

♂ ad., ♂ imm., 2 ♀. Muara Kiawai, Ophir Districts, 40 M.

♂. Pasir Ganting, Indrapura, Padang Lowlands,

Male: iris very dark sepia, bill black, feet pinkish flesh, digits pale brownish pink, claws pale slaty.

The female has the bill brownish black and the immature bird the bill black with yellowish tomia on the lower mandible.

Wings, ♂ 99, 98, 97, 96, 95, 88 (vix ad.); 87 (imm.); ♀ 91, 91, 90 mm.

Two females (both 30th May) had developed ovaries.

The bird lives in the swampy forest along the coast and in secondary forest up to 800 M. where it frequents shady spots. Does not occur in old forest. Of all the birds of Sumatra it has undoubtedly the nicest song. The males are far in the majority.

The females are much paler below than the males: the immature male has the abdomen almost entirely white.

SYLVIIDAE.

280. *Cettia montana sumatrana* Grant.

R. & K., I, p. 216, pl. VII, fig. 4.

♂, ♀. Mt. Talamau, Ophir Districts, 2600 M.

♂. Mt. Dempu, Palembang, 2200 M.

Iris greyish brown; bill blackish brown, basal half of lower mandible brownish yellow; feet sepia.

Wings, ♂ 55, 51; ♀ 55 mm.

This bird lives in the bushes and ferns of the high region from about 2100 metres up to the limit of vegetation. It is very tame and allows itself to be observed at close quarters. Its song consists of a series of feeble and plaintive notes.

The specimens agree well with the original typical series.

281. *Orthotomus atrogularis* Temm.

♂. Balun, Muara Labu, Padang Highlands, 480 M.

♂, ♀. Penatei, Korinchi, 300 M.

2 ♂. Serapei, Korinchi, 300 M.

♀. Muara Sako, Indrapura, 300 M.

Iris pale brown, upper mandible blackish brown, lower brownish pink, tip sometimes darker, feet purplish or pinkish pale brown, digits darker, soles yellow.

Wings, ♂, 45, 45, 44; ♀ 43.5, 43, 41 mm.

282. *Orthotomus sepium cineraceus* Blyth.

3 ♂, 2 ♀. Fort de Kock, Padang Highlands, 920 M.

♂. Baso, Agam, Padang Highlands, 900 M.

♂ imm. Palupah, Agam, Padang Highlands, 640 M.

♂. Aur, Kumanis, Padang Highlands, 200 M.

♂, ♀. Balun, Muara Labu, Padang Highlands, 480 M.

♂. Mt. Talamau, Ophir Districts, 500 M.

Iris pale rusty brown, upper mandible sepia, lower pinkish with pale sepia tip, feet pinkish pale sepia, claws yellow.

Wings 48.5, 49, 50, 50, 50, 50 (*imm.*), 51, 52.5; ♀ 45, 47.5, 48 mm.

The immature male has the chin and sides of throat much paler than in the adult, the foreneck and breast pale greyish white and a wash of greenish yellow on the sides of the neck and across the breast. The back is a dull earthy brown and there is no rufous forehead.

Contents of stomach : insects.

Lives in the scrub bush, in plantations, and is a standing inhabitant of village and town gardens, where it frequents by preference the hedges. According to the natives *Cuculus* (serial No. 113) deposits its eggs in the nest of this species.

283. *Cisticola juncidis cursitans* (Frankl.)?

Cisticola cisticola R. & K., I, p. 218; R. & K., II, p. 120.

2 ♂, 3 ♀, 1 sex inc. Balun, Muara Labu, Padang Highlands, 480 M. 26-29 July, 1914.

Iris pale yellowish brown, upper mandible sepia, tomia yellowish white, lower mandible yellowish white with brownish tip, or yellowish pink with brownish tip, feet pale brownish pink.

Wings, ♂ 47.5, 47; ♀ 45.5, 46.5, 46; sex inc. 45. Tails ♂ 46, 45; ♀ 47, 43, —; sex inc. 42 mm.

The feathers of the crown are black with narrow fulvous edges.

Very common in growing rice and high grass, climbing up and down the blades ; if disturbed it will fly up at the last moment with a fluttering flight, suddenly falling down among the grass, which makes it very hard to get a shot at it.

284. *Phylloscopus borealis* (Blas.) subsp. ?

R. & K., p. 218.

1 sex inc. Puntian, Kumanis, Padang Highlands,
280 M. 19th March, 1915.

In moult.

285. *Phyllergates cucullatus cucullatus* (Temm.).

Phyllergates cucullatus sumatranus R. & K., I, p. 219; R. & K., III, p. 108.

2 ♂. Mt. Talamau, Ophir Districts, 1500 M.

♀. Alahan Pandjang, Padang Highlands, 1500 M.

♀. Sungei Kumbang, Korinchi, 1400 M.

Iris very dark grey or greyish brown, upper mandible dark sepia, extreme tip pale, lower mandible pale brown, tip and tomia dark brown, feet yellowish or pinkish sepia, soles dark yellow, claws blackish.

Wings, ♂ 51, 48 ; ♀ 45.5, 45.5 mm.

Occurs among the bushes and small trees which grow in old forest.

286. *Suya superciliaris albigularis* Hume.

R. & K., I, p. 219.

6 ♂, 2 ♀. Fort de Kock, Padang Highlands, 920 M.

♂ juv. Andalas, Tandjung, Padang Highlands,
720 M.

♀. Palupah, Padang Highlands, 640 M.

2 ♀. Sungei Kumbang, Korinchi, 1400 M.

3 ♂. Rimbo Pengadang, Lebong, Bencoolen,
1000 M.

♂. Pasumah, Mt. Dempu, Palembang, 900 M.

Iris dark grey, brownish grey or greenish grey, upper mandible blackish brown, lower pinkish pale sepia, feet and claws brownish pink, soles whitish.

Wings, ♂ 54, 54, 53, 52, 52, 51, 51, 51, 50, 50, 50, 49,
49, 48 ; ♀ 49, 50 mm.

The flanks are very variable in colour ranging from pale buff to tawny. The young example differs from adults in being paler and rather browner above with a paler bill.

Very common in hedges in open country, in village gardens, at the outskirts of towns, in swampy light forest, in clearings, everywhere where there is a matted mass of low bushes and creepers, but not in the dark forest.

The birds, generally in pairs or families of four or five specimens, travel from bush to bush, not very high from the ground, dodging and climbing in and out of the tangled masses of vegetation. Their flight is rather clumsy.

287. *Prinia familiaris* Horsf.

♂. Fort de Kock, Padang Highlands, 920 M.

♂, 2 ♀. Buo, Padang Highlands, 280 M.

♀. Aur, Kumanis, Padang Highlands, 200 M.

♂. Bencoolen town.

Male : iris reddish brown, bill black, or brownish black, feet yellowish pink, claws whitish. The female has the upper mandible brownish black and the lower yellowish pink with a brownish tip.

Wings, ♂ 56, 56, 55 ; ♀ 51.5, 49.5, 48.5 mm.

Lives in open country in hedges and bushes, in village gardens.

288. *Burnesia flaviventris flaviventris* (Deless.).

3 ♂. Balun, Muara Labu, Padang Highlands, 480 M.

♂. Shores of lake, Korinchi, 733 M.

Iris pale yellowish brown, bill black, feet brownish yellow or brownish pink, claws greyish pink.

Wings, 47, 46, 45, 45 mm.

Found in open country with long grass near water ; the Korinchi specimen was shot in the reeds along the lake shore.

LANIIDAE.

289. *Hemipus hirundinaceus* (Temm.).

Hemipus obscurus R. & K., I, p. 222; R. & K., II, p. 121; R. & K., III, p. 108.

♂ ad., 2 ♂ imm. Fort de Kock, Padang Highlands, 920 M.

2 ♀. Buo, Padang Highlands, 280 M.

♂. Puntian, Kumanis, Padang Highlands, 280 M.

♂ ad., ♂ imm., ♀. Bencoolen town.

♂ imm. Pasumah Estate, Mt. Dempo, Palembang, 900 M.

Male : iris dark brown, bill, feet, and claws black, soles whitish.

Females and immature birds have the bill brownish black, the base of the lower mandible paler and the feet blackish or black.

Wings, ♂ 65.5, 65, 65, 65, 65.5 (*imm.*), 65 (*imm.*), 64 (*imm.*); ♀ 67, 65, 63 mm.

The birds sexed as immature males are inseparable from the females.

Very common in secondary forest, in open country on isolated clumps of trees, in plantations ; not met in old forest. Usually in pairs or in small flocks up to about eight birds. Frequents flowering trees on account of the insects swarming on the flowers. It ranges higher (viz. up to 1000 M.), than supposed by Robinson and Kloss (p. 223).

290. *Hemipus picatus picatus* (Sykes).

R. & K., I, p. 223.

♂, ♀. Fort de Kock, Padang Highlands, 920 M.

♂, ♀. Andalas, Tandjung, Padang Highlands, 720 M.

♂, 2 ♀. Sungei Kumbang, Korinchi, 1400 M.

♂ imm. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

5 ♂ ad., ♂ imm., 2 ♀. Suban Ajam, Mt. Kaba, Bencoolen, 1000 M.

♀. Air Njuruk, Mt. Dempu, Palembang, 1400 M.

Male : iris dark brown, bill feet and claws black. Females and immature birds have brownish black bills and blackish feet.

Wings, ♂ 64, 63, 63, 62, 62, 61, 60, 64 (*imm.*), 63 (*imm.*); ♀ 66, 66, 64, 64, 63, 63, 62.

The immature males are less vinaceous below with a dark brown upper side rapidly changing to shining black.

A careful examination of this considerable series confirms our previous opinion that *H. p. intermedius*, Salvad., cannot be maintained.

Common; lives in secondary forest, plantations, but also in old forest.

291. *Tephrodornis gularis fretensis* Rob. and Kloss.

Tephrodornis sordida R. & K., I, p. 221; R. & K., II, p. 121.

Tephrodornis pelvica fretensis R. & K., III, p. 109.

♂ juv. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

♂, ♀. Pasumah Estate, Mt. Dempu, Palembang, 900 M.

Male : iris greenish yellow, bill black, feet plumbeous, claws blackish. The female has the iris brownish yellow and the bill blackish brown. In the young male the iris is yellowish brown, bill sepia, feet plumbeous, claws blackish.

Wings, ♂ 100, 102 (*imm.*); ♀ 105 mm.

The young bird closely resembles the female but is considerably spotted and barred with white on the upper surface and wings.

A rare species, obtained in secondary forest.

Probably confined to the mountains in this part of S. W. Sumatra as *T. g. gularis* (Raffles) occurs in the lowlands of Bencoolen and Indrapura.

292. *Platylophus galericulatus coronatus* (Raffles).

R. & K., I, p. 223.

2 ♂, ♀ (?). Balun, Muara Labu, Padang Highlands, 480 M.

♂. Puntian, Kumanis, Padang Highlands, 280 M.

♂. Muara Kiawai, Ophir Districts, 40 M.

♂. Talu, Ophir Districts, 520 M.

♂. Mt. Talamau, Ophir Districts, 800 M.

♀ imm. Penatei, Korinchi, 300 M.

2 ♂. Talang Ampat, Bencoolen, 40 M.

2 ♂, ♀. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

Iris dark sepia, bill black, feet and claws bluish grey to plumbeous. Immature birds have the lower mandible dark pinkish brown and the gape yellow.

Wings, ♂ 139, 137, 136, 135, 134, 132, 131, 130, 130 ; ♀ 140, 136, 130, 130 (*imm.*).

The immature female is paler than the adults, lacks the blackish patches on the sides of the neck, and has pale tips to the wingcoverts.

Contents of stomach : insects (green caterpillars, grasshoppers, *Coleoptera*, etc.).

Occurs in secondary forest, and also, but scarcer, in old forest. Lives in pairs and utters an exceedingly shrill whistle. If one of the couple is killed, its mate will certainly come back to the spot after some time. During life the crest is erected when the bird is active.

The specimens from Talang Ampat are topotypes.

293. *Lanius schach bentet* Horsf.

R. & K., I, p. 224.

4 ♂, ♀. Fort de Kock, Padang Highlands, 920 M.

♀. Sandaran Agung, Korinchi, 733 M.

Iris dark sepia, bill black, feet graphite black.

Measurements in the flesh.—

Wings, ♂ 91, 89, 89, 88 ; ♀ 90, 88 (worn) mm. Tails, ♂ 140, 135, 129, 128 ; ♀ 131, 122 (worn) mm.

The black frontal band is wider in young birds.

There is also a difference in the whitish margin of the secondary quills.

A female (26th January) had well-developed ovaries.

Very common in open country, where it can always be seen on bushes, low trees, telegraph wires or other points of vantage, whence it can overlook its surroundings. Has a harsh shrieking note. I have never found insects on thorns, and doubt whether the Asiatic species of *Lanius* have the same habit of the European ones of impaling their prey.

294. *Lanius tigrinus* (Drap.).

♀. Fort de Kock, Padang Highlands, 920 M.
April.

♂ imm. Pasir Ganting, Indrapura, Sea level.
October.

Iris dark brown, bluish grey, culmen, tip, and tomia black, lower mandible dirty white, tip blue-grey with black extremity, sometimes a black gonys, feet bluish grey.

Wings, ♂ 82; ♀ 85 mm.

The immature bird has the grey of the head mingled with earthy brown, possesses black markings on the sides of the neck and has these more marked on the sides of the breast and flanks.

Not very common. Has the same habits as *L. s. bentet*.

295. *Lanius cristatus superciliosus* (Lath.).

R. & K., II. p. 122.

4♂ ad., 2♀ ad., ♀ subad. Fort de Kock, Padang,
Highlands, 920 M., March (in moult) and April.

♂, ♀ subad. Kamang, Agam, Padang Highlands,
88 M., May.

♀ subad. Pangkalan Koto Bahru, Pajokumbuh,
Padang Highlands, 120 M., April.

♀ subad. Koto Tuo, Mt. Singgalang, Padang
Highlands, 1000 M., March (in moult).

Iris dark sepia, upper mandible black, lower bluish grey or pinkish grey, tip black or blackish brown, feet blackish or plumbeous, claws black.

Wings, ♂ 89, 86, 86, 85, 85; ♀ 86, 85, 86 imm., 86 imm., 85 imm., 84 imm.

The immature birds have dark crescentic markings on the breast and flanks: none of the adults show the rich rufous brown of the mature pelage.

As common as *L. s. bentet* and with the same habits.

PARIDAE.

296. *Parus major malayorum* Robinson and Kloss.

R. K., I, p. 226.

2 ♂ ad., ♂ imm., 2 ♀. Fort de Kock, Padang Highlands, 920 M.

♀. Suban Ajam, Mt. Kaba, Bencoolen, 1200 M.

♀. Air Njuruk, Mt. Dempu, Palembang, 1400 M.

1 sex inc. Koto Tuo, Mt. Singgalang, Padang Highlands, 1000 M.

1 sex inc. Mt. Talamau, Ophir Districts, 2000 M.

Iris very dark brown, bill black, feet blackish.

Wings, ♂ 69, 67, 66.5, 65 imm.; ♀ 62.5, 62, 61; sex inc. 65, 63 mm.

A female (21st January) had well developed ovaries.

A constant inhabitant of gardens in villages and towns, but also living in plantations, secondary and old forest, occurring up to 3000 M. where the vegetation consists only of low *Vaccinium*, *Rhododendrum*, and *Gaultheria* bushes with dense undergrowth.

A very fearless and active bird, behaving much like the European *Paridae*.

SITTIDAE.

297. *Dendrophila azurea expectata* (Hartert).

Poliositta azurea expectata R. & K., I, p. 228.

♂, ♀. Mt. Talamau, Ophir Districts, 1300 M.

4 ♂, 3 ♀. Sungei Kumbang, Korinchi, 1400 M.

2 ♂, ♀. Suban Ajam, Mt. Kaba, Bencoolen, 1000 M.

3 ♂. Air Njuruk, Mt. Dempu, Palembang, 1400 M.

♂. Mt. Dempu, Palembang, 1600 M.

♀. Air Gaung Ketjil, Mt. Dempu, Palembang, 1900 M.

Iris cream-coloured, orbital skin very pale bluish cream colour, bill and feet very pale greenish blue cream colour, claws slaty.

Wings, ♂ 82, 81, 80, 80, 80, 79, 79, 78, 78, 76, 75; ♀ 80, 79, 78, 77, 76, 75 mm.

Contents of stomach: insects (green caterpillars, etc.).

Common in old forest. The birds generally travel in the mixed flocks, in small parties up to six or seven.

CORVIDAE.

298. *Corvus enca compiliator* Richmond.

R. & K., p. 229.

♂. Buo, Padang Highlands, 280 M.

♀. Aur, Kumanis, Padang Highlands.

3♂. Fort de Kock, Padang Highlands, 920 M.

♂, 2♀. Balun, Muara Labu, Padang Highlands,
480 M.

♂. Kamang, Agam, Padang Highlands, 880 M.

Iris dark brown, bill, feet and claws black.

Wings, ♂ 322, 320, 317, 314, 305, 298; ♀ 309, 305,
300 mm.

Contents of stomach in one examined: a young bird,
Coleoptera and fruit seeds.

Fairly common in open country, villages, towns,
plantations; usually in small flocks of four to six birds.
They nest in village gardens and plantations, often on
thorny trees (*Erythrina*); the nests are not made in each
others neighbourhood.

(Dr. Koningsberger says in his book "De Vogels van
Java," Vol. i, p. 59, that the two Java species *C. macrorhyn-*
chus and *C. enca* can be distinguished from each other,
apart from the difference in size, by their voice, the one
being identical with that of the European *C. frugilegus* L.,
the other reminding more of *C. corone* L. Moreover, with
C. macrorhyuchus the hairlike feathers covering the
nostrils "continue along the culmen." Perhaps he means,
that the hairs in *C. macrorhyuchus* cover entirely the base
of the culmen. In all my specimens the base of the culmen
is bare).

299. *Platysmurus leucopterus leucopterus* (Temm.).

2♀ ad., ♀ imm. Aur, Kumanis, Padang High-
lands, 200 M.

2♂, ♀. Muara Kiawai, Ophir Districts, 40 M.

Iris dark crimson; bill, feet and claws black.

Wings, ♂ 199, 192; ♀ 195, 192, 186, 196 (*imm.*)

A female (28th May) had developed ovaries.

Lives in pairs in bush country, secondary and light
swampy forest. Its call note sounds like a penny tin
whistle.

300. *Cissa chinensis minor* (Cab.).

R. & K., I, p. 231.

♂, ♀, 2♂ nestlings, 2♀ nestlings. Andalas, Tand-
jung, Padang Highlands, 720 M., 22-31 May.

♀. Talu, Ophir Districts, 520 M.

♂, ♀. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

2 ♂. Suban Ajam, Mt. Kaba, Bencoolen.

♂. Pasumah Estate, Mt. Dempu, Palembang, 900 M.

Iris carmine, eyelids lake red, bill lake red, feet orange lake red, claws pale lake red.

The immature bird has brown eyes, the bill purplish pink changing gradually to a faded lake red when the bird grows older, feet pale yellowish brown with a pinkish cast.

Wings, ♂ 133, 130, 130, 129, 129 ; ♀ 130, 129, 128 mm.

The Minangkabau name *ungge udang* means "shrimp bird."

According to the natives the bird feeds also on shrimps from the brooks. In confinement it takes shrimps as well as fish. Of several birds inspected the stomach contained insects, as caterpillars, grass-hoppers, etc.

The four nestlings Nos. 4066, 4101, 4109, 4123 were taken from a nest which was found on a steep hillside, in the fork of a young tree, two metres above the ground. The birds were killed at intervals of several days, to obtain different stages of development.

Lives in pairs in secondary and in old forest.

The nestlings are greenish grey on the back, their wings are dull olive brown, and a few of the secondaries have pale green tips but are without black markings; breasts and abdomens are greyish white sometimes slightly tinged with green.

301. *Dendrocitta occipitalis occipitalis* (S. Müll.).

R. & K., I, p. 230.

♂. Mt. Talamau, Ophir Districts, 400 M.

♂. Fort de Kock, Padang Highlands, 920 M.

♂. Andalas, Tandjung, Padang Highlands, 720 M.

♂. Balun, Muara Labu, Padang Highlands, 480 M.

♂ imm. Palupah, Agam, Padang Highlands, 640 M.

♀. Sungei Kumbang, Korinchi, 1400 M.

2 ♂, 2 ♀. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

Iris dark crimson, bill black, feet graphite black.

Wings, ♂ 145, 144, 143, 141, 137, 135, 139 (*imm.*);
♀ 144, 142, 137 mm.

The series varies considerably in the intensity and tone of the colours : the immature male only differs from adults in having whitish tips to some of the blackish crown feathers, ochraceous tips to the wing-coverts and a deep ochraceous, instead of a grey, rump.

Contents of stomach : fruit.

Common in secondary and old forest and in plantations, in pairs or small families. The bird has different call notes, one being a harsh cry, the other some whistling notes reminding *Platysmurus leucopterus*.

DICRURIDAE.

302. *Dicrurus stigmatops phaedra* (Rchnw.).

Buchanga leucophaea phaedra R. & K., I, p. 233.

3 ♂, ♀. Fort de Kock, Padang Highlands, 920 M.
January and March.

♀. Koto Tuo, Mt. Singgalang, Padang Highlands,
1000 M. March.

3 ♂, ♀. Rimbo Pengadang, Lebong, Bencoolen,
1000 M. June.

Iris reddish brown (terracotta), bill and feet black.

Wings, ♂ 132, 131, 128, 128, 125, 120 (very worn);
♀ 123, 122, 122 mm.

A very common bird, lives in open country, village and town gardens, plantations, secondary forest, and at the edge of old forest. It is generally seen sitting on some projecting bough, telegraph wire or other elevated point, from where it sallies out to catch its prey, consisting of insects, returning always to its perch.

303. *Dicrurus borneensis sumatranus* (Wardl.-Rams).

Dicruopsis sumatranus R. & K., I, p. 232, R. & K., II, p. 124.

♀. Tanangtalu, Ophir Districts, 1000 M.

♂, 2 ♀. Mt. Talamau, Ophir Districts, 1200–
1300 M.

2 ♀. Rimbo Pengadang, Lebong, Bencoolen,
1200 M.

2 ♀. Suban Ajam, Mt. Kaba, Bencoolen, 1200 M.

Iris dark crimson, bill, feet and claws black.

Wings, ♂ 153; ♀ 154, 152, 147, 145, 143, 140, 140 mm.

Contents of stomach : insects (*Coleoptera*, grasshoppers, etc.).

Lives in old forest, and at the edge of clearings. During life the feathers of the back of the head are standing up backwards in the shape of two horns.

We have, for the present, referred the Sumatran bird to *borneensis* Sharpe, which it closely resembles : though both are undoubtedly only forms of some earlier described species.

304. *Chaptia aenea picinus* (Bp.).

Chaptia aenea malayensis R. & K., II, p. 125.

3 ♂ ad., ♂ imm., 2 ♀. Muara Kiawai, Ophir Districts, 40 M.

♂. Mt. Talamau, Ophir Districts, 400 M.

2 ♂ imm., ♀. Balun, Muara Labu, Padang Highlands, 480 M.

♂. Serapei, Korinchi, 800 M.

♂. Bencoolen town.

Iris brown to crimson, bill and feet black.

Wings, ♂ 112, 110, 109, 108, 108, 105 ; ♀ 113, 111, 109 ; Immature males 100, 105, 107 mm.

(The last bird was still being fed by the parents).

Contents of stomach : insects.

In secondary and swampy light forest, and at the edge of clearings.

The young birds are largely blackish brown and have only partly acquired the steely plumage of the adults.

305. *Dissemurus paradiseus platurus* (Vieill.).

R. K., I, p. 232 ; R. & K., III, p. 111.

♂, ♀. Buo, Padang Highlands, 280 M.

2 ♀ ad., ♀ imm. Balun, Muara Labu, Padang Highlands, 480 M.

♂, ♀. Andalas, Tandjung, Padang Highlands, 720 M.

♂. Aur, Kumanis, Padang Highlands, 200 M.

♂, ♀. Muara Kiawai, Ophir Districts, 40 M.

♂. Sukamenanti, Ophir Districts, 200 M.

♂. Muara Sako, Indrapura, 300 M.

♀. Talang Ampat, Bencoolen, 40 M.

Iris brownish red to crimson, bill and feet black.

Wings, ♂ 143, 143, 143, 142, 142, 138 ; ♀ 139, 136, 135, 135, 131, 127 (subad.), 133 (imm.), mm.

Contents of stomach : insects.

In old and secondary forest. in plantations, and sometimes on isolated clumps of high trees in open country.

306. *Bhringa remifer remifer* (Temm.).

R. & K., I, p. 234.

2 ♀. Mt. Talamau, Ophir Districts, 1000–1300 M.

♀. Sungei Kumbang, Korinchi, 1400 M.

2 ♂, ♀. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

♂, ♀. Air Njuruk, Mt. Dempu, Palembang, 1400 M.

Iris dark crimson, bill and feet black.

Wings, ♂ 132, 131, 127; ♀ 130, 129, 126, 126 126 mm.

Contents of stomach : insects (grass-hoppers, etc.).

Lives exclusively in old forest. The mixed flocks of birds one meets often in the forest are generally headed by a pair of this species or of *Rhipidura albicollis atrata*.

All the Drongos are active, restless and fearless birds and splendid flyers; they attack birds of prey and owls, uttering shrieking cries. If one of a pair is killed, I have often seen its mate dashing round the huntsman and almost charging him.

They have very good sight, for they hunt flying insects at dawn, sitting on a bare bough and sallying forth every time they perceive a prey in a radius of 10 to 15 metres.

Their song is very varied and consists of sweet whistling notes; they also repeat the song of other birds.

ORIOLIDAE.

307. *Oriolus chinensis maculatus* Vieill.

R. & K., I, p. 235.

3 ♂ ad., 2 ♂ imm., ♀. Fort de Kock, Padang Highlands, 920 M.

2 ♂. Balun, Muara Labu, Padang Highlands, 480 M.

2 ♂, 2 ♀, 2 ♀ imm. Pangkalan Kota Bharu, Pajokumbuh, Padang Highlands, 120 M.

♂. Sandaran Agung, Korinchi, 733 M.

♀. Bencoolen town.

2 ♂ ad., ♂ imm. Suban Ajam, Mt. Kaba, Bencoolen.

Iris crimson, bill pinkish horn, more or less suffused with crimson veining, feet plumbeous. In immature birds the bill is brownish black.

Wings, ♂ 145, 143, 142, 141, 141, 137, 135 (imp.), 134, 133, 132, 139 (imm.), 138 (imm.), 137 (imm.); ♀ 138, 136, 135, 133, 135 (imm.), 133 (imm.) mm.

Lives in open country, plantations, village and town gardens. Its nest is suspended in the fork of a slender twig. Feeds on fruit and insects. Besides the facts summed up by Robinson and Kloss (Coll. Birds N. E. Sumatra, p. 126) for discerning the immature birds, the following may be mentioned.

The bill is brownish black, and as the bird advances in age it becomes more or less stained by pinkish horn and gradually the blackish colour fades. The upper side of the body, except the tail coverts, is olivaceous green. The black in the tail and wings is not a clear black, but strongly suffused by olivaceous green, just as in the adult female. The collar behind the neck from lore to lore, in the adults deep black, is in the immature bird greenish olivaceous, stained more or less with black.

308. *Oriolus xanthonotus xanthonotus* Horsf.

R. & K., I, p. 236.

3 ♂ ad., ♂ imm. Muara Kiawai, Ophir Districts,
40 M.

♂. Balun, Muara Labu, Padang Highlands, 480 M.

♂. Penatei, Korinchi, 300 M.

♂. Muara Sako, Indrapura, 300 M.

♂ ad., ♂ nestling. Bencoolen town, June.

Iris carmine, bill maroon brown, feet dirty plumbeous, soles yellowish, claws slaty.

The nestling had the iris brown, the bill pinkish flesh, and the feet pale purplish grey.

Wings, ♂ 112, 107, 105, 104, 104, 103, 102 (*imm.*);
♀ 106 mm.

The immature bird is greener above than the adult, the crown and nape are olivaceous-brown with black patches and the foreneck is white with black markings. The nestling has the upper parts dull golden ochraceous, mottled with fuscous and is white below striped with black.

Lives in secondary and old forest, at the edge of clearings, and in swampy light forest.

309. *Oriolus cruentus consanguineus* Wardl-Rams.

R. & K., I, p. 236; R. & K., III, p. 112.

2 ♂, ♂ imm., 3 ♀. Tanangtalu, Ophir Districts,
1000 M.

♂. Mt. Talamau, Ophir Districts, 1300 M.

♂. Fort van der Capellen, Padang Highlands,
465 M.

♂, 2 ♀. Fort de Kock, Padang Highlands, 920 M.

♂, 2 ♀ imm. Sungei Kumbang, Korinchi, 1400 M.

♂ subad., ♂ nestling. Rimbo Pengadang, Lebong, Bencoolen, 1000 M. 23rd June.

♂, 4 ♀. Suban Ajam, Mt. Kaba, Bencoolen, 480 M.

♂, ♂ subad., ♀. Air Njuruk, Mt. Dempu, Palembang, 1400 M.

Iris very dark sepia, bill bluish slate, tip blackish, feet plumbeous or bluish slate, soles brownish yellow, claws blackish.

Measurements in the flesh.

Wings, ♂ 135, 131, 131, 131, 130, 127, 127 (imp.), 126, 132 (subad.), 126 (subad., imp.), 124 (imm.); ♀ 132, 130, 130, 130, 129, 128, 127, 125, 124, 123, 125 (imm.), 123 (imm.) mm.

The nestling is black throughout, largely glossy, except for white patches at the bend of the wings and some white tips to upper and lower tail-coverts. In the immature male many of the feathers of the breast, flanks and abdomen have fulvous edges. The remaining males have large crimson areas on the breast and patches of crimson on the wing-coverts: all are glossy black throughout except the subadult birds.

Of the females the immature specimens resembles the immature male. Of the other ten, only two have red patches on the wing-coverts and only three have a few red spots on the breast. Several have a brownish black area on the breast, equivalent to the red area of the males; others lack this and are practically uniform below. It seems probable that those with red on the wing-coverts are the most mature examples, those with red spotted breasts probably coming next in age.

A female (7th May) had developed ovaries.

Contents of stomach: fruit.

Very common in certain districts, in others totally absent; to be found in old and secondary forest, and along the roads leading through them, in plantations and in clearings.

ARTAMIDAE.

310. *Artamus leucorhynchus* Oberh.

Artamus leucogaster R. & K., I, p. 237; R. & K., II, p. 126.

♂, 2 ♀. Fort de Kock, Padang Highlands, 920 M.

♂. Fort van der Capellan, Padang Highlands, 465 M.

♂, ♀ imm. Balun, Muara Labu, Padang Highlands, 480 M.

♂ imm. Sandaran Agung, Korinchi, 733 M.

♂ imm., ♀. Bencoolen town.

♂. Suban Ajam, Mt. Kaba, Bencoolen, 1000 M.

Iris very dark sepia (black), feet greyish blue, tip suffused with blackish, feet plumbeous, claws blackish.

The immature birds have brownish slaty bills, yellow inside.

Wings, ♂ 140, 136, 134, —, 134 (*imm.*), 129 (*imm.*); ♀ 141, 137, 134, 140 (*imm.*).

A female (15th March) had developed ovaries.

Common in open country. Inhabits the Islands of Bali, Java, Sumatra and others adjacent.

STURNIDAE.

311. *Gracula javana javana* (Cuv.).

♂ juv. Aur. Kumanis, Padang Highlands, 200 M. March.

♀ imm. Pangkalan Koto Bharu, Pajokumbuh, Padang Highlands, 120 M. April.

♀. Muara Kiawai, Ophir Districts, 40 M.

♂, ♀. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

Iris very dark brown, bill orange red, tip yellow, orbital skin and lappets yellow, feet chrome, claws slaty.

Wings, ♂ 182; ♀ 188, 178, 167 (*imm.*) mm.

The young male (wing 150), which has apparently only just left the nest, merely differs from adults in having less metallic gloss, with the bases of the feathers white instead of grey. It shows no trace of striping.

Lives in old and secondary forest or in open country near the forest. Most nests I saw were made in the hollow of some high isolated tree. The birds are very tough and a heavy charge is required to kill them.

312. *Aplonis panayensis strigatus* (Horsf.).

R. & K., I, p. 238.

2♂ ad., ♂ imm., ♀. Fort de Kock, Padang Highlands, 920 M.

♂ imm., 1 sex inc. imm. Baso, Agam, Padang Highlands, 900 M.

♂, 1 sex inc. Sandaran Agung, Korinchi, 733 M.

♂. Bencoolen town.

♂ ad., ♂ imm., ♀ imm. Air Njuruk, Mt. Dempo, Palembang, 1300 M.

Iris crimson, bill, feet, and claws black.

The immature birds have the iris orange or orange red, the feet slaty black or black.

Wings. ♂ 99, 98, 98, 98, 96, 98 (*imm.*), 96 (*imm.*); ♀ 91, 90 (*imm.*); sex inc., 104 ad., 92 (*imm.*).

Very common in large flocks; feeds on fruit, wild and cultivated, is very fond of the fruit of *Cinnamomum burmanni* Bl.

Nests in the most different places: in Coconut and Areca palms, in hollows in dead tree trunks; near Padang Tarap I found their nests in hollows they had apparently dug out themselves in the perpendicular walls of volcanic tuff; on the island of Simalur (Westcoast Atjeh) I found their nests in bamboo stakes, which the natives had stuck in the water near the beach to fasten their nets on.

The eggs are pale bluish green.

PLOCEIDAE.

313. *Munia oryzivora* (Linn.).

R. & K., II, p. 127.

♀. Bencoolen town.

Iris crimson, bill pale pink, tomia white, feet purplish pink.

Wing 65 mm.

I found this species only in the town of Bencoolen and its surroundings, where it must have been introduced from Java. It seems not to have spread along the coast or further inland in this locality. In the Padang Lowlands and Highlands it is not indigenous and only known as a cage bird imported from Java. This is very curious considering the extensive rice cultivation of these parts of Sumatra.

It appears to be common in Deli, N. E. Sumatra.

314. *Munia maja* (Linn.).

R. & K., I, p. 240.

6 ♂ ad., ♂ imm., Fort de Kock, Padang Highlands, 920 M.

3 ♀. Balun, Muara Labu, Padang Highlands, 460 M.

Iris very dark brown, bill bluish grey, feet plumbeous.

Wings, ♂ 57, 56, 53, 53, 53, 52; ♀ 53, 53, 52 mm.

The young male (wing 51) is dull brown throughout above and below buffy white with brown patches on the breast.

Lives in open country and near villages. When the rice is ripe it gathers in large flocks of some hundred birds

in the ricefields. The flocks are by far not so large as the enormous congregations in which *Munia oryzivora* is seen during the rice harvest in Java.

315. *Munia atricapilla* (Vieill.).

R. & K., III, p. 112.

♂. Pangkalan Koto Baharu, Pajokumbuh, Padang Highlands, 120 M.

Iris dark brown, bill bluish grey, feet dark plumbeous. Wing 52 mm.

Does not occur in the Padang Highlands proper, for Pangkalan Koto Baharu is situated in the great plain to the north of the Barisan chain. The species lives in small flocks of ten to fifteen birds and is not so common as *M. maja* and *M. nisorio*.

Not so pale as specimens from the Batak Highlands.

316. *Munia punctularia nisorio* (Temm.).

R. & K., I, p. 239.

4 ♂, 4 ♀. Fort de Kock, Padang Highlands, 920 M.

♂. Balun, Muara Labu, Padang Highlands, 480 M.

Iris reddish brown, upper mandible black, lower bluish grey, feet plumbeous.

Wings, ♂ 54, 54, 53, 53, 51; ♀ 53.5, 51, 51, 51 mm.

Lives in open country and near villages.

Gathers during the rice harvest in much smaller flocks than *M. maja*.

Nests by preference in pinangpalms (*Areca catechu*).

317. *Munia acuticauda acuticauda* Hodgs.

R. & K., I, p. 240.

♀. Fort van der Capellan, Padang Highlands, 465 M.

♂ juv., ♀. Talu, Ophir Districts, 520 M.

♂. Sandaran Agung, Korinchi, 733 M.

♂. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

Iris dark brown, upper mandible black, lower bluish grey, feet plumbeous, soles greenish grey.

Wings, ♂ 49, 49, 51 (juv.); ♀ 48, 44 mm.

The young male differs from the adult in being paler, less blackish above, with a slight wash of ochreous on the white rump, throat and foreneck present a few blackish patches only.

Lives in small flocks of ten to twelve birds in open country, village and town gardens.

Feeds on grass-seeds. Not so common as the two previous species.

318. *Erythrura prasina* (Sparrm.).

3 ♂. Kumpulan, Agam, Padang Highlands, 200 M.

♂. Bondjol, Agam, Padang Highlands, 220 M.

2 ♂ imm., 4 ♀. Palembajan, Agam, Padang Highlands, 790 M.

Iris dark greyish brown, bill black, feet and claws brownish pink.

Wings, ♂ 56, 58, 59, 60, 57 (*imm.*), 57 (*imm.*); ♀ 56, 58, 59, 60 mm.

The immature males only differ from females in the possession of a faint spot of red on the breast.

The species is very constant throughout its range.

Lives in small flocks near rice fields ; in some parts of the Padang Highlands it is numerous, but never so common as *M. maja* and *M. nisoria*.

In the Malay Peninsula it is much more a jungle bird than Mr. Jacobson's note seems to indicate for Sumatra.

319. *Ploceus passerinus infortunatus* Hartert.

R. & K., I, p. 239.

6 ♂, 5 ♀. Fort de Kock, Padang Highlands, 920 M.

Male : iris brown, bill brownish black, base of lower mandible paler, feet pinkish flesh, claws blackish pink.

The female has the bill yellowish brown, with the base of the lower mandible yellow.

The immature bird has the bill brownish with a lighter base of the lower mandible.

Wings, ♂ 69, 70, 71, 71, 72, 72; ♀ 67, 68, 69, 69, 70 mm.

A bird sexed as a young male only differs from females in the darker colour of the bill.

All the birds were from the same colony in some cocopalms in a garden (January-April).

FRINGILLIDAE.

320. *Passer montanus malaccensis* Dubois.

R. & K., II, p. 128.

2 ♂, ♂ imm., 3 ♀. Fort de Kock, Padang Highlands, 920 M.

♂ imm., ♀ ad., ♀ imm. Alahan Pandjang, Padang Highlands, 1500 M.

Iris dark brown, bill black, feet brownish pink.

Wings, ♂ 70, 68, 66 (*imm.*), 65 (*imm.*); ♀ 67, 67 (*albino*), 66, 66, 66 (*imm.*).

The female No. 4350 (3rd August) had well developed ovaries.

A female from Fort de Kock is a nearly complete albino, but has some of the secondaries normal, the iris hazel brown, bill and feet pinkish.

MOTACILLIDAE.

321. *Motacilla cinerea melanope* Pall.

♂. Alahan Pandjang, Padang Highlands, 1500 M., 3rd August.

♀. Serapei, Korinchi, 800 M., 2nd August.

3♂. Sungei Kumbang, Korinchi, 1400 M., 5th September.

♀. Pantjuran Gading, Indrapura, 1000 M., 26th September.

Iris very dark brown, upper mandible black or brownish black, lower pinkish flesh or whitish, tip black or brownish black, feet pinkish pale brown, at the back yellowish, digits pinkish grey.

Wings, ♂ 82, 81, 80, 79; ♀ 81, 80 mm.

Lives along streams which run through the forest and is not seen in open country as the next species.

At the end of August 1915 on ascending the Peak of Korinchi from the southside I observed a flock of these birds, which had settled on the bare rocks at an altitude of 2900 metres, and which apparently were on migration.

These birds, all with white throats, were taken between August 3rd and September 26th. Our own large Malayan series was collected between August 3rd and March 21st: only in February and March were black-throated birds met with.

322. *Motacilla flava simillima* Hartert.

3♂, 13♀. Fort de Kock, Padang Highlands, 920 M., 11th–24th April and 15th March.

Iris very dark sepia brown, bill brownish black, base of lower mandible yellowish, pale brownish, or greyish, feet blackish.

Wings, ♂ 80, 79, 79; ♀ 80, 79, 78, 78, 76, 76, 76, 75, 75, 75, 74 mm.

Very common in open country on wet rice fields and along streams, never perches on trees, but always settles on the ground, on rocks or on the roofs of houses..

Migratory, arrive in the Padang Highlands in September, but are most plentiful in March and April.

The males and females seem to travel in separate flocks chiefly consisting of one sex only.

Our own large series was collected between 15th October and 8th May.

323. *Dendronanthus indicus* (Gm.).

R. & K., I, p. 240.

3 ♂, ♀. Fort de Kock, Padang Highlands, 920 M.
December and January.

Iris brown, upper mandible blackish brown, lower very pale brown or pale pinkish brown, feet very pale brown.

Wings, ♂ 78, 78, 76; ♀ 76 mm.

Not very common : migratory.

324. *Anthus richardi malayensis* Eyton.

R. & K., I, p. 241.

♀. Pajokumbuh, Padang Highlands, 500 M.,
February 1st.

♂. Buo, Padang Highlands, 280 M., February
22nd.

7 ♂, ♀. Fort de Kock, Padang Highlands, 920 M.,
March 2nd-14th, April 9th and May 5th.

♂. Aur, Kumanis, Padang Highlands, 200 M.,
March 13th.

♂. Tabat Patah Silimpang, Padang Highlands,
1000 M., March 28th.

♂, ♀. Bencoolen town.

Iris dark brown, upper mandible brownish black, lower pinkish flesh, tip brownish, feet pinkish yellow brown, claws pale slaty.

Wings, ♂ 83, 83, 83, 83, 82, 82, 82, 82, 82, 81, 80; ♀ 79,
78, 77 mm.

Common on grass lands.

Nearly all the birds have a kind of Nematode under the eyelids; these parasites seem, however, not to do much harm to the eyes, as these are never inflamed or injured.

NECTARINIIDAE.

325. *Aethopyga mystacalis temmincki* (S. Müll.).

R. & K., I, p. 242.

♂, ♀. Mt. Talamau, Ophir Districts, 1300-1600 M.

4 ♂, 2 ♀. Alahan Pandjang, Padang Highlands,
1500 M.

♂. Serapei, Korinchi, 800 M.

4 ♂, 2 ♀. Rimbo Pengadang, Lebong, Bencoolen,
1000 M.

♂. Suban Ajam, Mt. Kaba, Bencoolen, 1200 M.

Iris very dark greyish brown, upper mandible brownish black, lower reddish pale sepia, feet pinkish sepia.

Wings, ♂ 57, 57, 56, 55, 55, 55, 54, 54, 54, 53, 52; ♀ 51, 49, 48, 47, 47 mm.

Contents of stomach : spiders and nectar from flowers.

Description of the female : Above and below greyish green, head greyer ; primaries, secondaries and tail feathers more bronzy, fringed with reddish, in which this species differs from the succeeding.

(The females, though much smaller than the males, belong undoubtedly to this species, for they were shot together with the males. They can readily be distinguished from the females of *Aethopyga siparaja* by the reddish fringes of the tail feathers, primaries and wing-coverts).

Not so common as the *A. siparaja* and living in old forest and on the edge of clearings and as a rule at higher elevations.

326. *Aethopyga siparaja siparaja* (Raffles).

R. & K., I, p. 241.

5 ♂ ad., ♂ imm. Fort de Kock, Padang Highlands, 920 M.

♂, ♀. Balun, Muara Labu, Padang Highlands, 480 M.

♂. Koto Alam, Pajokumbuh, Padang Highlands, 320 M.

♂ subad. Muara Kiawai, Ophir Districts, 40 M.

♂. Bencoolen town.

Iris dark reddish brown, upper mandible blackish brown, lower reddish, very pale brown, or very pale sepia, tip darker, feet brownish black, soles brownish yellow.

Wings, ♂ 54, 53, 53, 53, 51, 52, 52, 52, 49 (subad.), 48 (juv.); ♀ 45 mm.

The young male only differs from the female in having some of the feathers of the mantle tipped with red.

Contents of stomach : one examined contained a seed, which may be accidental, for these birds feed on insects, chiefly spiders, and on the nectar from flowers.

They are often seen puncturing the base of *Canna* flowers to get at the nectar.

(The same habit has been described by Swynnerton in the Journ. Linn. Soc. Vol. xliii, Botany (1916) of the African *Cinnyris chalybaceus* (L.), and by van der Meer Mohr in the Trop. Natuur viii, p. 122 (1919) of the Javanese *Leptocoma ornata* (Less.).

Lives in open country and is a regular visitor of town gardens : is to be found wherever *Eugenia malaccensis* L. is flowering.

327. *Leptocoma brasiliana brasiliana* (Gm.).

Leptocoma hasselti R. & K., III, p. 113.

♂. Aur, Kumanis, Padang Highlands, 200 M.

Iris red, bill brownish black, feet black.

Wing 47 mm.

Obtained in bush country with isolated trees.

In the Padang Highlands this species is rare.

328. *Leptocoma jugularis ornata* (Less.).

Cyrtostomus ornata R. & K., I, p. 242; R. & K., II, p. 130.

2 ♂, ♀. Fort de Kock, Padang Highlands, 920 M.

♂, ♀. Alahan Pandjang, Padang Highlands,
1500 M.

Male : iris very brown (black), bill and feet black. In the female the bill and feet are more brownish black.

Wings, ♂ 54, 53, 53 ; ♀ 49, 48 mm.

This bird has the same habit of perforating the base of *Canna* flowers, as *Aethopyga siparaja siparaja*, and is often seen in gardens and plantations.

329. *Anthreptes macularia macularia* Blyth.

R. & K., III, p. 113.

♂. Balun, Muara Labu, Padang Highlands, 480 M.

Iris sepia, upper mandible brownish black, lower mandible paler, feet brownish green with a yellowish cast, soles brownish yellow.

Wing, ♂ No. 4192-68.

Obtained at the edge of old forest. A rare species in the Padang Highlands.

Malayan and Sumatran birds are certainly identical and the Malayan name, though the diagnosis is short, has precedence. Whether Hartert's Bornean race *A. m. intensior* is valid we are unable to say with certainty on our material but any differences are small.

330. *Anthreptes simplex simplex* (S. Müll.).

Anthothreptes simplex R. & K., I, p. 243.

♀ ad., ♀ imm. Balun, Muara Labu, Padang Highlands, 480 M.

2 ♂, ♀. Muara Kiawai, Ophir Districts, 40 M.

♂. Muara Sako, Indrapura, 300 M.

♂, ♀. Rimbo Pengadang, Lebong, Bencoolen,
1000 M.

♂. Pasumah Estate, Mt. Dempu, Palembang,
900 M.

Iris crimson, bill brownish black, base of lower mandible whitish, or pale brown, feet yellowish sepia.

The immature bird has the iris pale sepia, the upper mandible greenish sepia, the lower mandible whitish, the feet brownish green with a yellowish cast.

Wings, ♂ 64, 63, 62, 61, 59; ♀ 58, 57, 57, 58 (*imm.*).

Common in old forest at flowering trees.

331. Anthreptes malaccensis malaccensis (Scop.).

Anthrothreptes malaccensis R. & K., I, p. 243.

♂. Muara Kaiwai, Ophir Districts, 40 M.

♂. Sukamenanti, Ophir Districts, 200 M.

♀. Air Taman, Mt. Pasaman, Ophir Districts, 300 M.

♀. Buo, Padang Highlands, 280 M.

♂ ad., ♂ imm., ♀. Aur, Padang Highlands, 200 M.

♂. Singkarak, Padang Highlands, 400 M.

♂. Balun, Padang Highlands, 480 M.

♀. Pangkalan Koto Bharu, Pajokumbuh, Padang Highlands, 120 M.

Iris very dark reddish brown, bill brownish black, base of lower mandible sometimes whitish sepia, feet yellowish sepia with greenish cast, soles orange brown.

Wings, ♂ 69, 68, 67, 66, 64, 63, 65 (*imm.*); ♀ 64, 63, 61, 59 mm.

Very common, usually on coconut trees.

332. Arachnothera longirostra longirostra (Lath.).

R. & K., I, p. 240.

♂. Muara Kiawai, Ophir Districts, 40 M.

4 ♂, 4 ♀. Balun, Muara Labu, Padang Highlands, 480 M.

♂. R i m b o Pengadang, Lebong, Bencoolen, 1000 M.

♂, ♀. Air Njuruk, Mt. Dempu, Palembang, 1400 M.

♀. Pasumah Estate, Mt. Dempu, Palembang, 900 M.

Iris dark sepia, upper mandible brownish black, lower silvery grey, tip brownish, feet bluish grey.

Wings, ♂ 71, 69, 69, 68, 68, 68, 68; ♀ 65, 64, 63, 63, 62, 62 mm.

In some parts of the Padang Highlands common in plantations and village gardens situated near forest.

We have again compared this considerable series with a Malayan series and cannot with certainty separate the Sumatran birds which have been named *A. l. melanchima* by Oberholser.

333. *Arachnothera affinis modesta* (Eyton).

R. & K., II, p. 131.

♂. Mt. Talamau, Ophir Districts, 400 M.

♂. Muara Kaiwai, Ophir Districts, 40 M.

2 ♂. Aur, Kumanis, Padang Highlands, 200 M.

3 ♂, 2 ♀. Balun, Muara Labu, Padang Highlands, 480 M.

Iris dark greyish brown, upper mandible blackish brown, lower whitish pale sepia, feet and claws brownish fleshy.

Wings, ♂ 87, 85, 85, 84, 83, 83, 82; ♀ 77, 76 mm.

Contents of stomach : spiders.

334. *Arachnothera chrysogenys* Temm.

R. & K., I, p. 245.

♂. Balun, Muara Labu, Padang Highlands, 480 M.

♂. Aur, Kumanis, Padang Highlands, 200 M.

Upper mandible brownish black, lower sepia brown, feet brownish fleshy, claws brown.

Wings 86, 86 mm.

335. *Arachnothera robusta robusta* Müll. and Schleg.

R. & K., I, p. 246.

♂. Balun, Muara Labu, Padang Highlands, 480 M.

Iris very dark greyish brown, upper mandible brownish black, base of lower mandible pale sepia, feet greyish black, soles yellowish.

Wing 88 mm.

336. *Arachnothera flavigaster* (Eyton).

R. & K., I, p. 245.

♀. Aur, Kumanis, Padang Highlands, 200 M.

♀. Balun, Muara Labu, Padang Highlands, 480 M.

♂, ♀. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.

♀. Suban Ajam, Mt. Kaba, Bencoolen, 1200 M.

Iris very dark greyish brown (black), upper mandible dark sepia, lower pale sepia, tip sepia, feet brownish fleshy.

Wings, ♂ 108; ♀ 99, 99, 99, 96 (worn).

DICAETIDAE.

337. *Dicaeum cruentatum sumatranum* Cab.

R. & K., I, p. 247.

- ♂. Aur, Kumanis, Padang Highlands, 200 M.
- ♂. Fort de Kock, Padang Highlands, 920 M.
- ♂. Fort van der Capellan, Padang Highlands, 465 M.
- ♀. Pangkalan Koto Bharu, Pajokumbuh, Padang Highlands, 120 M.
- ♂. Bencoolen town.
- ♂. Suban Ajam, Redjang, Bencoolen, 1000 M.
- ♂, ♀ imm. Pasumah Estate, Mt. Dempu, Palembang, 900 M.

Male : iris very dark sepia, bill and feet black.

The female has the lower mandible brownish black.

The immature bird has the iris sepia, bill orange, culmen and tip of lower mandible sepia, feet blackish.

Wings, ♂ 46.5, 46, 45.5, 45, 45, 44 ; ♀ 42.5, 45 (*imm.*).

Not rare in open country with isolated trees, in village and town gardens and in light secondary forest and plantations. Its food seems to consist exclusively of the seeds of *Loranthus* and *Viscum*.

338. *Dicaeum trigonostigma trigonostigma* (Scop.).

R. & K., III, p. 115.

- ♂. Muara Kiawai, Ophir Districts, 40 M.
- ♂. Mt. Talamau, Ophir Districts, 500 M.
- 2♂, ♀ imm. Balun, Muara Labu, Padang Highlands, 480 M.
- 2♂, ♀. Rimbo Pengadang, Lebong, Bencoolen, 1000 M.
- 2♂ ad., ♂ imm. Pasumah Estate, Mt. Dempu, Palembang, 900 M.

Iris sepia, bill and feet black. Immature specimens have the upper mandible blackish brown, the lower more or less chrome, and the feet blackish.

Wings, ♂ 50, 50, 50, 50, 49, 49, 49, 49, 49 (*imm.*); ♀ 50, 47 (*imm.*).

The stomach of one examined contained the remains of an insect.

In secondary forest and at the edge of old forest.

This series shows much variation in the tone of grey of the foreneck which can be matched in all cases by birds from the Malay States. We do not therefore use *croceovenstre* Vigors, for the Sumatran bird (cf. Hartert, Bull Brit. Orn. Club, XXXVIII, 1918, p. 74).

The immature birds differ from the adult female in being greener throughout: the young male has a spot of orange on the breast.

339. *Dicaeum chrysorrheum chrysorrheum* Temm.

♂. Andalas, Tandjung, Padang Highlands, 720 M.

Iris brownish pink, bill slaty, base of lower mandible whitish, feet black.

Wing 60 mm.

A very rare species, shot on a wild fig tree in fruit and apparently feeding on it.

340. *Dicaeum concolor olivaceum* Walden.

R. & K., II, p. 132.

♀. Serapei, Korinchi, 800 M.

Upper mandible horny black, lower mandible greyish black, feet plumbeous black.

Wing 41 mm.

341. *Prionochilus percussus ignicapillus* (Eyton).

5♂ ad., ♂ imm., 2♀ imm. Balun, Muara Labu, Padang Highlands, 480 M. June.

♀. Serapei, Korinchi, 800 M.

♀. Bencoolen town.

♂ vix ad. Rimbo Pengadang, Lebong, Bencoolen, 1000 M. June.

Male: iris sepia, upper mandible black, lower plumbeous, tip blackish, feet plumbeous. The female has the upper mandible brownish black, the lower greyish or yellowish, tip blackish. The immature birds have the iris yellowish brown, upper mandible brownish, lower whitish or orange, with brownish or blackish tip.

Wings, ♂ 59, 57, 57, 55, 54, 54, 55 (*imm.*); ♀ 53, 52, 51 (*imm.*), 51 (*imm.*).

The immature females are rather duller below than the adult with less whitish throats and lack the orange patch on the crown. The young male agrees with the young females but is becoming blue above and has a small orange-red spot on the foreneck.

Not uncommon at the edge of clearings in old forest.

ZOSTEROPIDAE.

342. *Zosterops montana* (Bp.).

R. & K., I, p. 248.

3 ♀. Mt. Talamau, Ophir Districts, 2500–2600 M.

Iris greyish white, bill hornblack, base of lower mandible grey, feet plumbeous.

Wings 59, 59, 56 mm.

These birds were met on Mt. Talamau from 2400 metres up to the top (2912 M.), where they occurred in small flocks up to a dozen amongst the bushes of *Rhododendron* and *Vaccinium*.

They were so exceedingly tame and inquisitive, that they approached to a distance of one to two yards, and, in fact, I several times caught these birds alive with my butterfly net, but had to release them, as I had no opportunity then to prepare the skins.

These specimens, which are probably topotypes of *Z. montana* are less yellow below than our large Korinchi series, but we are not inclined at present to separate them on this account.

343. *Zosterops difficilis* Robinson and Kloss.

R. & K., I, p. 250.

♀, 1 sex inc. Mt. Dempo, Palembang, 2800 M.

Iris yellowish white, bill hornblack, base of lower mandible grey, feet plumbeous.

Total length 122, 122; tail 42, 42; wing 58, 59; tarsus 15, 17; bill from gape 15, 14.5 mm.

These specimens agree well with the descriptions and figure of Forbes' birds (type series) from the same locality.

344. *Zosterops aureiventer buxtoni* Nicholson.

R. & K., I, p. 251.

3 ♂, 3 ♀. Fort de Kock, Padang Highlands, 920 M.

4 ♂. Suban Ajam, Mt. Kaba, Bencoolen, 1000 M.

♂. Air Njuruk, Mt. Dempo, Palembang, 1400 M.

2 ♂, ♀. Pasumah Estate, Mt. Dempo, Palembang, 900 M.

Iris pale purplish grey, very pale chocolate brown, or pale yellow, bill hornblack, base of lower mandible bluish grey or yellowish grey, feet plumbeous or bluish grey.

Wings, ♂ 52, 52, 51, 51, 51, 50, 50, 49, 49, 48; ♀ 51, 50, 48, 48 mm.

Very common, nearly always travelling in smaller or larger flocks, from six to thirty birds and more, among trees in open country, in groves, plantations, village and

town gardens, and even in old forest as proved by the specimen from Air Njuruk.

Very active little birds, climbing among the foliage much in the manner of tits.

345. *Zosterops atricapilla* Salvad.

R. & K., I, p. 250; R. & K., II, p. 133.

♂. Mt. Talamau, Ophir Districts, 2200 M.

♂ juv., ♀. Sarasah, Mt. Talamau, Ophir Districts,
1850 M. June.

Iris yellowish brown, bill hornblack, base of lower mandible grey, feet slaty.

The juvenile bird had the iris greyish brown, the bill pinkish slate, and the feet grey.

Wings, ♂ 56 ; ♀ 58 mm.

The juvenile bird (wing 46 mm.) is duller throughout than the adults with practically no black on the forehead and no white ring round the eye. It was being fed by the female at the time they were shot.

The birds were seen several times on Mt. Talamau, always in numbers, together with *Pericrocotus* spec., *Dendrophila azurea expectata*, etc.

They live in the area where the jungle is thinning out and merging into the alpine bush.

CHALCOPARIIDAE.

346. *Chalcoparia singalensis sumatrana* Kloss.

Chalcoparia singalensis R. & K., I, p. 244; R. & K., II, p. 131.

♂. Mt. Talamau, Ophir Districts, 400 M. (Type ♂).

♀. Tanangtalu, Ophir Districts, 1000 M. (Type ♀).

♂. Muara Kiawai, Ophir Districts, 40 M.

2 ♂. Balun, Muara Labu, Padang Highlands,
480 M.

♂. Serapei, Korinchi, 800 M.

♂. R i m b o Pengadang, Lebong, Bencoolen,
1000 M.

♀. Talang Ampat, Bencoolen, 40 M.

♀. Pasumah Estate, Mt. Dempu, Palembang,
900 M.

Iris dark crimson, bill black, feet dark brownish yellow with greenish cast, soles brownish yellow.

Wings, ♂ 57, 57, 55, 55, 54, 53 ; ♀ 53, 53, 53 mm.

Contents of stomach : insects.

Species in Mr. E. Jacobson's collection new to Sumatra :—

1. *Porzana pusilla pusilla*.
2. *Dendrocyena arcuata*.
3. *Pernis apivorus orientalis*.
4. *Collocalia linchi oberholseri*.
5. *Collocalia gigas*.
6. *Cuculus optatus*.
7. *Indicator archipelagus*.
8. *Zanthopygia narcissina zanthopygia*.
9. *Criniger gularis tephrogenys*.
10. *Malacocincla abbotti olivacea*.

New form described from Mr. E. Jacobson's collection :—

1. *Chalcoparia singalensis sumatrana*.

CORRECTION.

For paragraph 5, page 280, read :—

We have used Stuart Baker's recently published name for this race. It is worthy of note that *L. n. timoriensis* occurs in the extreme east of Java, while in discussing the species as a whole *Perissolalage chalepa*, Oberholser, from Solombo Besar Id. E. Java Sea (Proc. U. S. Nat. Mus. 54, 1917, p. 182) requires consideration. In any event the sub-specific name for the bird hitherto known as *timoriensis* is *Lalage nigra sueurii* (Vieill.), *Turdus sueurii*, Vieill., Nouv. Dict., XX, 1818, p. 270 (Timor).

IV. LIST OF NATIVE NAMES.

By E. JACOBSON.

- (M.) = Minangkabau dialect.
 (O.) = Dialect of the Ophir Districts.
 (K.) = Korinchi dialect.
 (R.) = Redjang dialect (Bencoolen).
 (B.) = Bencoolen (town).

In the spelling of the native names the Dutch letter *æ* has been rendered by *u*, and the Dutch *j* by *y*; the mute *e* has been rendered by *ě*, the *a* represents an indistinct *a*. The Malay hamza ('), means that the word has to be broken off abruptly in pronunciation.

The names in the Redjang dialects (Bencoolen) and Bencoolen (town), I owe to the kindness of Mr. L. C. Westenenk, Resident of Bencoolen, who also revised the spelling of the Minangkabau names.

Accipiter virgatus. Siko * (M.).

Aegithina viridis. Kapeh kapeh (M.), unggeh tjapo (M.), unggeh kopi (M.).

Aethopyga temmincki and *siparaja.* Sidantiëng sirah kapalo (M.).

The Minangkabau names for *Nectariniidae* in general, the genus *Arachnothera* excluded, are : unggeh kumbang and unggeh bungo.

Alcedo bengalensis and *meninting.* Unggeh udang (M.).

Alcedo euryzona. Siko * bada (M.).

Amaurornis javanica. Rua * rua * (M.), koan (K.).

Anas superciliosa. Ondan (M.), unan (K.).

Anorrhinus galeritus. Kukai (M.), burung bakawan (M.), anggang kara * (M.) kuku (K.).

Anthracoceros convexus. Anggang kikië * (M.).

Anthus malayensis. Lantja * lantja * (M.).

Aplonis strigatus. Kaloloyang (M.), unggeh kandang (M.), lalayang timah (K.), burung kaliëng (R.).

Arachnothera in general : Unggeh djantung (M.), sitjetje * (M.), sitjetje * puar (M.), pipi * puar (M.), burung djantung (B.), taratas R.).

Arborophila rubrirostris. Puyuah rimbo (M. and K.).

Ardetta cinnamomea. Rua * sipului * (M.).

Ardetta sinensis. Rua * sipului * (M.).

Argusianus argus. Kuau (M.).

Arrenga castanea. Pintjur latah gadang (O.).

Arrenga malanura. Barau barau kumbang (K.).

Artamus amydrus. Layang layang (M.).

Astur soloensis. Siko * (M.).

Bhringa remifer. Sawai antiëng antiëng (M.), sawai ran-tiëng (M.), sawi (R.).

Brachypodius atriceps. Unggeh bungo lundang (M.).

Bubulcus coromandus. Bangau putiëh (M.), bangau pinggan (M.).

Buceros rhinoceros. Anggang gadang (M.), anggang barangah (M.).

Butreron capellei. Bakuë (O.), punai batui (M.).

Caloperdix sumatrana. Tantorat (M.), puyuah rimbo (M.), unggeh salung (M.).

Calorhampus hayi. Pi-e ° pi-e ° (M.).

Caprimulgus affinis. Tanatadu (M.), tantabau (M.), sitjoreng (M.), sisagan (M.).

Centropus bubutus. Bubui ° (M.), kubut (K.).

Centropus javanensis. Tarakui ° (M.), tarakup (R.).

Chaetura leucopygialis. Layang layang (M.).

Chalcophaps indica. Punai tanah (M.).

Chaptia picinus. Sawai (M.), sawi (R.).

Charadrius fulvus. Gadang kapalo (Padang Lowlands).

Chloropsis. The Minangkabau name for all the species of *Chloropsis* is "unggeh daun" or "gulu gulu"; the smaller species are called "gulu gulu tjipui °."

Chotorhea chrysopogon. Takur gadang (M.).

Chotorhea mystacophanes. Tagun tagun (M.).

Cissa minor. Unggeh udang (M.).

Cisticola cursitans. Latië ° latië ° (M.).

Collocalia spp. Layang layang (M.).

Conurus longicauda. Bayan (M.).

Copsychus musicus. Murai (M.).

Corvus compiler. Gaga ° (M.), ka ° (R.).

Corydon sumatranus. Pintuai (M.), hantuai (O.), pëlano (K.).

Criniger sumatranus. Gunggung kapeh (M.).

Cyanops henrici and *oorti*. Tagun tagun (M.).

Cymborhynchus lemniscatus. Palano (M.) tampalano (M.), tampalanau (R.).

Demiegretta sacra. Bangau hitam (M.).

Dendrocitta occipitalis. Tangkarulang (M.), tangkoling (M.), tangkaulië (M.), tēpuli (K.).

Dendrocycna arcuata and *javanica*. Balibih (M.).

- Dendrophila expectata.* Ungge * baruë (M.).
- Dicaeidae* in general. Tjantjiu (M.), tjintjiu (M.).
- Dicrurus annectens* and *sumatranus*. Sawai (M.), sawi (R.).
- Dicrurus phaedra.* Unggeh abu (M.), tarabuë (M.), pipi * tupang (M.), sawai dantiëng (M.).
- Dissemurus platurus.* Sawai antiëng antiëng (M.), sawai rantiëng (M.), sawi (R.).
- Elanus hypoleucus.* Laki laki angin (M.).
- Erythrura prasina.* Tarahan (M.), lëkese * (R.).
- Eurylaimus harteri* and *ochromalus.* Piturun hudjan (M.).
- Excalfactoria chinensis.* Pikau (M.).
- Gallinago stenura.* Bakië * (M.), bakië * paka * (M.).
- Gallinula orientalis.* Tiung air (M.), tiung gadang (M.), oa (K.).
- Gallus ferrugineus.* Ayam ratiëh (M.), ayam birugo (M.).
- Garrulax bicolor.* Bondo rimbo (M.), unggeh oban (M.).
- Garrulax palliatus.* Baligo (M.), kara udjan (K.).
- Geopelia striata.* Katitiran (M.).
- Gorsachius melanolophus.* Bangau rimbo (M.).
- Gracula javana.* Tiung (M.), tiung karambië (M.).
- Halcyon cyanescens.* Sikikië * (M.).
- Haliastur intermedius.* Alang bondo (M.).
- Hapalarpactes mackloti.* Palimo karo (M.), unggeh kam-bui * (O.).
- Hemiprocne comata.* Layang layang (M.).
- Hemiprocne harterti.* Layang layang (M.), arumbe (M.).
- Henicurus frontalis* and *ruficapillus.* Murai batu (M.).
- Henicurus sumatranus.* Murai batu (M.), garidi air (M.).
- Hirundo gutturalis* and *javanica.* Layang layang (M.).
- Houppifer inornatus.* Merah mato (M.), rembeh mato (O.), abang pipi (K.), sirah pipi (K.).
- Huhua sumatrana.* Kua * bulan (M.).
- Hypotaenidia striata.* Pikau sawah (M.), oa padi (K.).

Ixos cinereus. Barabah rimbo (M.).

Ixos sumatranus. Kara djukut (K.).

Ketupa ketupa. Kua * (M.), bingkua * (M.), alang kětupui (M.), situngkuilh (M.), kua * bumbun (Padang Lowlands).

Kittacincla tricolor. Murai anting (M.), murai kentja * (M.).

Lalage nigra. Unggeh bungo kapeh (M.).

Lanius bentet. Siareh (M.).

Limnobaenus fuscus. Oa merah dedo (K.).

Lophospizias trivirgatus. Siko * (M.).

Lophura rufa. Muo (M.).

Loriculus galgulus. Salindi * (M.), sarindit (B.).

Lyncornis temmincki. Tjintjelo (M.), tjantjodo (M.), tjantjedo (M.), takē tarau (R.).

Macropygia leptogrammica. Limbukan (M.), limbuan (M.).

Macropygia ruficeps. Upan (M.), sa upan (M.), lerung (K.), balam pagai (Padang Lowlands).

Melanocichla lugubris. Radjo kaduai (M.), unggeh gunung (O.).

Merops javanicus and *viridis*. Biri * biri * (M.).

Mesia laurinae. Burung sam (K.).

Mesobucco duvauceli. Tagun tagun (M.).

Mesophoyx intermedia. Bangau putiēh (M.).

Microhierax fringillarius. Siko * bondo (M.).

Micropus subfurcatus. Layang layang (M.).

Motacilla melanope and *simillima*. Pinti pinti (M.), pinti pinti air (M.), tjilin tjilin (M.), tjaruliēng (M.), burung pēdidi (K.); burung pērdidi (K.).

Munia acuticauda. Pipi * pari * (M.), pipi * tjēri * (R.).

Munia maja. Pipi * bondo (M.), kumpin (M.).

Munia nisoria. Pipi * pinang (M.), tjidi * pinang (M.),
bondo pinang (M.).

Munia oryzivora. Pipi * sinandung (M.).

Muscadivora aenea and *badia.* Pagam (M.), pargam (M.).

Myiophoneus dicrorhynchus. Tiung batu (M.), umpan
bakan (K.).

Oriolus consanguineus. Bajang (M.), unggeh baharo (M.),
burung kunto (K.).

Oriolus maculatus. Mantialau (M.), muntialau (M.),
moentilau (M.), gantialau (M.), guntialau (M.), banti-
lau (M.), burung kuning (R.).

Oriolus xanthonotus. Pěrtjang (K.), pěrtjang (R.).

Otus lempiji. Kua * tjiri * ayam (M.), pungguk sit (R.).

Otus solokensis. Si tuo (K.), lang kětutut (M.).

Pandion haliaetus. Alang laui * (M.).

Parus malayorum. Unggeh sirieh (M.).

Passer malaccensis. Unggeh garedja (M.).

Penthoceryx fasciolata. Unggeh papo (M.), pipi papo (M.),
pi papo (M.).

Pericrocotus xanthogaster. Radjo unggeh (M.), burung
sěpah (K.).

Pernis orientalis and *ptilorhynchus.* Alang tambingka
(M.), tambingkar (R.).

Phalacrocorax carbo. Dandang (M.), děndang (K.).

Phoenicophaes erythrognathus. Ungge * lobo (M.).

Picidae. The Minangkabau name for woodpeckers in
general is *subihi*, but as to the species there is much
confusion : often they are mistaken by the natives for
barbets and called *tagun tagun*.

Pitta schneideri. Kiki * imbo (K.).

Platylophus coronatus. Sibi (M.), sibihi (M.), unggeh
sala * (M.), sědjěri * (K.).

Platysmurus leucopterus. Unggeh kambing (M.).

Ploceus infortunatus. Tampuo (M.), pintau (R.).

Troëpyga lepida. Pintjur latah (M.), unggeh (K.).

- Poliolimnas cinereus*. Pekai (K.).
- Polyplectron chalcurom*. Karau karau (M.).
- Porphyrio calvus*. Oa ayam (K.).
- Prinia familiaris*. Pintjur maling (M.), sitjowe ° (M.).
- Psarisomus dalhousiae*. Unggeh djambu (M.).
- Psilopogon pyrolophus*. Loyan (M.), lawayan (M.), lawean (M.).
- Psittinus cyanurus*. Tanau (M.), keke ° (M.).
- Pycnonotus analis*. Barabah (M.), marabah (M.), barabah kampuëng (M.), bërëbah (B.), bërëbah pisang (B.).
- Pycnonotus barad*. Barabah tintëng (M.), mintjalo (M.), karapilai (M.), karakutië (M.), kuaran (M.), kara tinting (K.).
- Pycnonotus brunneus* and *cyanochrous*. Barabah Barabah rimbo (M.).
- Pyrotrogon flagrans*. Punai kërètjo (K.).
- Pyrotrogon sumatranus*. Unggeh kasumbo (M.).
- Pyrrherodias manillensis*. Bangau lanta ° (M.), bangau salewa (M.), burung ula (K.).
- Ramphalcyon cyanopteryx*. Unggeh udang nan gading (M.), békakau udang (R.).
- Rhinocichla mitrata*. Kudai (M.), kaduai (M.), kara kudai (M.), kudai (K.).
- Rhinoplax vigil*. Anggang danto (M.), anggang gadiëng (M.), anggang kudung (M.), burung gading (B.).
- Rhinortha chlorophaea*. Unggeh kaduë (M.).
- Rhipidura atrata*. Murai rimbo (K.).
- Rhipidura javanica*. Murai batu (M.) murai kentja ° (M.), siko ° rangi ° (M.).
- Rhizothera longirostris*. Aur lantiëng (M.), sau dantiëng (M.), kau lantiëng (M.), burung lantiëng (R.), bëlantiëng (O.).
- Rhyacophilus glareola*. Sikokoh (M.), sitjoda ° (M.) tjako-é (M.).
- Rhytidoceros* sp. Kalau kalau (M.), pusaran (R.).
- Rollulus roulroul*. Paniua (M.), banio (O.), baniul (R.).

- Rostratula benghalensis.* Bakiě ° balang (M.).
- Rubigula dispar.* Sipatja ° (M.).
- Scolopax saturata.* Kěnu-u (K.).
- Sibia simillima.* Takulit imbo (K.).
- Sphenocercus oxyurus.* Punai salung (M.), punai kara hidjau (M.).
- Spilornis bassus.* Alang bumbun (M.).
- Spizaetus limnaetus* and *alboniger.* Alang pungguě (M.),
alang buru ° (M.), alang tunggul (M.).
- Stachyris nigriceps.* Sipintjur (M.). A name applied to
other birds of this family also.
- Streptopelia tigrina.* Balam (M.).
- Suya albigularis.* Tjoeliě ° (M.), kětjiloet (K.).
- Trachycomus zeylanicus.* Barau barau (M.).
- Treron vernans.* Punai (M.), punai gantang (M.).
- Tringoides hypoleucus.* Sikokoh (M.), sitjoda ° (M.),
tjako-é (M.).
- Turnix pugnax.* Puyuăh bamban (M.), puyuăh bariang
(M.).
- Xantholaema delica.* Katanda (M.), kětagur (K.).
- Zosterops burtoni.* Unggeh kumbang (M.), sitjiu (M.).

XI. NOMENCLATORIAL REMARKS ON SUMATRAN BIRDS.

By E. STRESEMANN.

[In the preface to our revised "Nominal List of the Birds of Sumatra" (Journ. Fed. Malay States Museums, VIII, Part II (1923), pp. 319-362) we invited ornithologists to communicate to us any additions or corrections that appeared necessary in order that, by publishing them in this Journal, we might keep our knowledge of the island's avifauna up to date. We give below the first response received. H.C.R. and C.B.K.].

- No. 30. **Muscadivora**. **Ducula** Hodgson (type *D. insignis*) is an older name than *Muscadivora* and can, to my mind, be used for all the pigeons formerly called *Carpophaga*.
- No. 34. **Macropygia leptogrammica leptogrammica**. This bird should be called **Macropygia unchall unchall** (Wagl.) [*Columba unchall*, Wagler, Syst. Av. Columba, sp. 38 (1827) Java]. See Rothschild and Hartert, Nov. Zool. VIII, p. 119 (1901).
- No. 56. **Podicipes**. Read **Podiceps** Latham.
- No. 73. **Sarcogrammus** must be replaced by **Lobivanellus** Strickl. See Mathews, Nov. Zool. XVIII, p. 4 (1911). His remarks are correct.
- No. 75-76, etc. **Charadrius**. The type of *Charadrius* Linn., is *C. hiaticula*. **Aegialitis** Boie, is thus an absolute synonym of *Charadrius*. See Hartert, Vogel palaarkt. Fauna, p. 1531 (1920).
- No. 95. **Gallinago**. Now replaced by **Capella** Frenzel.
- No. 117. **Ardetta**. Must be replaced by **Ixobrychus** Billberg.
- No. 128. **Plotus**. Must be replaced by **Anhinga** Brisson.
- No. 223. **Apidae**. The family must be called **Apodidae** (*Apidae* are bees).
- No. 248. **Hierococcyx bocki** is a small race of *H. sparverioides* and should stand as **Hierococcyx sparverioides bocki**.
- No. 255. **Cuculus saturatus** is the same as **Cuculus optatus** (254). [Erroneously included by us for we followed Hartert (Vogel palaarkt. Fauna, p. 947). Should both names apply to the same bird, as Stresemann considers, it must be known as *C. saturatus* with *C. optatus* proposed two years later, as a synonym].

- No. 258. For **sepulchralis** read **sepulcralis**.
- No. 410. For **Otocompsa emeria peguensis** read **Otocompsa jocosa peguensis**. The name *jocosa* dates from 1759, *emeria* from 1766.
- No. 481. I think "**Cettia**" **montana** is more properly to be placed in the genus **Horeites** Hodgson.
- No. 509. Note. The description of **Platysmurus schlegeli** reads :—"P. aterrimo e Borneo similis, sed minor, rostro brevior, magis alto. Hab. in Sumatra" Mus. Lugd. I believe the type came really from Borneo.
- No. 537. **Sporaeginthus**. Must be replaced by **Amandava** Blyth. See Richmond, Proc. U. S. Nat. Mus. XXXV, p. 588 (1909).



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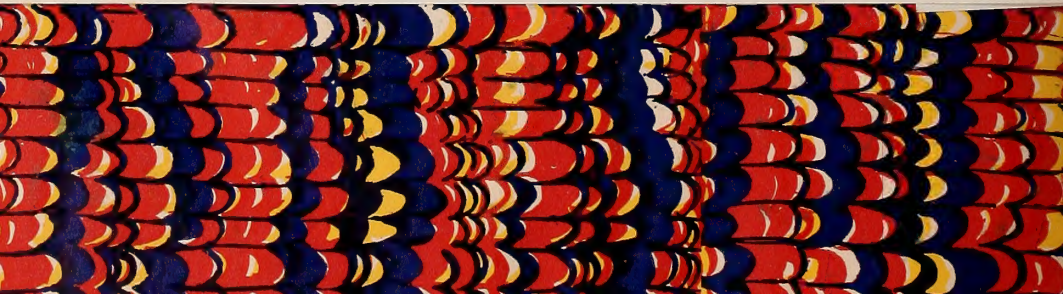
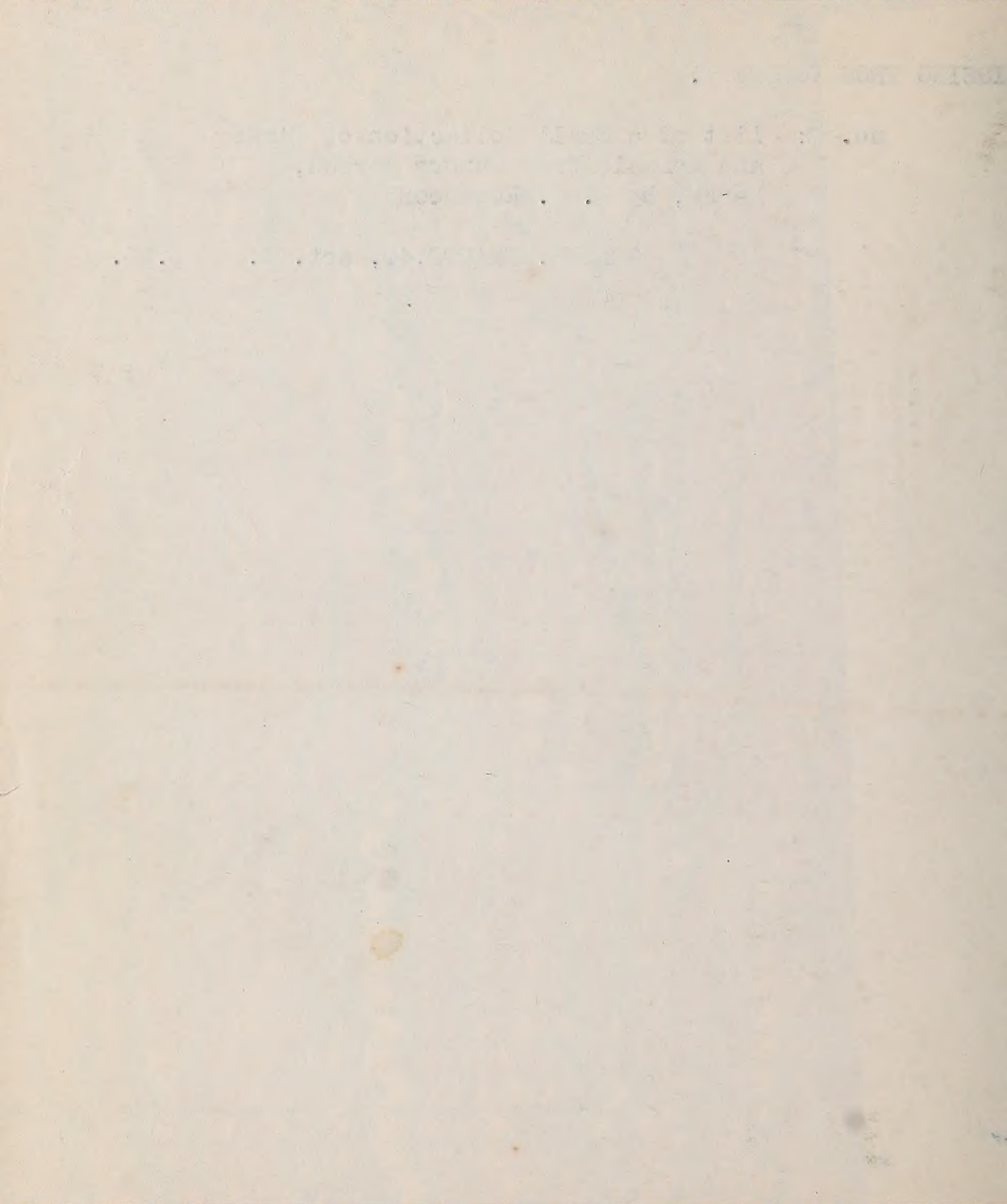
ALCURUS LEUCOGRAMMICUS (S. Müll.)
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MISSING FROM VOLUME V.

no. 2: List of a Small Collection of Birds
and Mammals from Gunong Kerbau,
Perak, by H. C. Robinson

ORNITH. TRACTS, 40, art. 9. p. 23.





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